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COLLAPSE OF THE NEW YORK STATE THRUWAY BRIDGE OVER THE SCHOHARIE CREEK

HEARING

BEFORE THE

SUBCOMMITTEE ON WATER RESOURCES,
TRANSPORTATION, AND INFRASTRUCTURE

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDREDTH CONGRESS

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COLLAPSE OF THE NEW YORK STATE THRUWAY BRIDGE OVER THE SCHOHARIE CREEK

MONDAY, MAY 4, 1987

U.S. Senate,
Committee on Environment and Public Works,
Subcommittee on Water Resources, Transportation,
and Infrastructure,
Amsterdam, NY.

The Subcommittee on Water Resources, Transportation, and Infrastructure met, pursuant to notice, at 9 a.m., in the auditorium, Amsterdam High School, Amsterdam, NY, Hon. Daniel Patrick Moynihan (chairman of the subcommittee), presiding.

Present: Senator Moynihan.

Also present: Representatives Stratton and Boehlert.

OPENING STATEMENT OF HON. DANIEL PATRICK MOYNIHAN, U.S. SENATOR FROM THE STATE OF NEW YORK

Senator Moynihan. Good morning to our guests.

We would like to announce we are here for a formal hearing of the Subcommittee on Water Resources, Transportation, and Infrastructure of the Senate Committee on Environment and Public Works. I am Senator Moynihan, and I will be presiding.

This is a Senate hearing, but it is, for all practical purposes, a joint hearing along with your Representatives in this part of the State.

On my left, your right, is the dean of our congressional delegation, Samuel S. Stratton, who has represented just about every part of this State at one time or another; a legend. And to my right, your left, is my Congressman and good friend, Sherwood D. Boehlert, from Utica. Their districts just about join the Schoharie Creek, and they have taken the time to come here.

This hearing concerns the Thruway bridge needs in this part of the State and what our plans are for dealing with the present situation.

I would like to read a statement I have:

I would like to welcome the invited witnesses and guests to this hearing of the Subcommittee on Water Resources, Transportation, and Infrastructure.

We are here today as a result of the tragedy at Schoharie Creek on April 5, 1987. Ten lives were lost, and the personal, social, and economic damage to this community is immeasurable.

Our purposes today are threefold: to gain a better understanding of why the Schoharie collapse occurred, to learn what is being done to repair the damage, and to begin to determine what we must do to take care of the needed reinvestment in the Nation's infrastructure.

This subcommittee really represents the reconstitution of the venerable Senate Public Works Committee. We are charged with looking after highways, harbors, navigable streams and rivers, and other basic structures of this Nation.

As part of the Senate Committee on Environment and Public Works, public works have often taken a back seat. I remember in 1977 when the term "environment" was added to the title of the committee, the phones at the staff offices were immediately answered "Environment Committee," because that term drew more interest and attention.

Public improvements to enhance the general welfare began with the founding fathers. Alexander Hamilton, in his "Report on Manufactures," called for investment in such "internal improvements." And those early public works, many built in New York State, were made to last.

In 1804, the year in which Amsterdam was so named, the Waterford Bridge was built over the Hudson River not far from here, 10 miles upstream from Albany. This covered wood truss bridge was in use for 105 years until destroyed by fire in 1909.

We no longer build our bridges out of wood. Concrete and steel don't easily burn, but the volume of traffic, weight of vehicles, and other manmade and natural forces create other stresses.

As I stood on the banks of the Schoharie Creek on April 6, my attention was drawn to the Schoharie Aqueduct about three-quarters of a mile away. There it stood amidst the swirling flood waters, a monument to the efforts of our forefathers.

While the objective in the 18th and 19th centuries was to build the canals, roads, bridges, and harbors to bring a young nation together and to facilitate the development of our commerce, our present challenge is to maintain and improve upon that system.

The scope and cost of the work that lies ahead is immense. According to the latest Federal Highway Administration estimates, the total cost of rehabilitating or replacing deficient bridges will come to $51.4 billion. Despite our efforts—the highway bill which we passed over the President's veto contained over $1.6 billion annually for bridge programs—we continue to fall further behind. In New York State alone, the annual gap between available resources and bridge repair and construction needs is some $295 million.

Wilbur Smith and Associates, a consultant to the Federal Highway Administration, estimates that $13 billion is needed immediately to correct the worst problems across the Nation. The outlays for the entire highway program in fiscal year 1987 are expected to be about $12.9 billion.

Before we hear from the witnesses, however, I think it important to discuss the recent experience with the Surface Transportation Act of 1987, the so-called "Highway Bill." Unless public perceptions can be changed, all such measures will face similar obstacles.

On the first day of the 100th Congress, the Environment and Public Works Committee introduced a bill to reauthorize the highway programs. We needed to do this since the House-Senate conference on a similar measure could not resolve the differences between the House and Senate passed measures prior to adjournment in October. The highway programs had expired.

Two weeks later, we marked up the bill and reported it out of committee.

I served as floor manager for the legislation which the Senate approved by a vote of 96 to 2, after only three days of debate—rare enough for such major legislation.

Then the truly tough work began as the Senate conferees, seven of us, met with our counterparts on the House side. We worked long hours, and in a little over three weeks, reached agreement on the Surface Transportation and Uniform Relocation Assistance Act of 1987.

Our product, the conference report, was well received in both Houses. There were only 17 votes to be found against the measure in each body. We breathed a sigh of relief and thought surely we had succeeded where we had not been able to last year when time ran out.

Then, in an incomprehensible act, the President vetoed the bill. Votes of 407 to 17 in the House and 79 to 17 in the Senate notwithstanding, we needed two-thirds of both bodies to vote to override the veto.

We all know how close the vote was. What few may know is how close we came to not having a highway bill this year—with great consequences indeed.

The highway program has been, in effect, on cruise control for over 30 years. Funds have been coming into the trust fund from the collection of gasoline and other excise taxes and have been returned to the State highway departments for use on the Federal-aid system.

It is important to note that our highway programs are an integral part of the economy, not something you can decide to just drop on a whim. Between 500,000 and 1,000,000 jobs were at stake—perhaps the health of the economy.

But we persevered and managed to get the needed votes.

New York State had only $6,000 in unobligated interstate 4R funds the day the veto was overridden. Those are the funds used for rehabilitation projects on the Thruway. Within hours of the vote, the apportionment certificates had been delivered to the States, and New York had $87 million in such funds alone.

184 days after the highway program had expired, we had a bill. More than half a year had gone by, and we wouldn't have had a bill at all if we hadn't been able to override the President's veto. The compromises were too delicate, the time too short.

Throughout the debate on this last major infrastructure bill, I tried to talk the economics of public works. What we got back was constant derision about "pork." At one point, the President was even going on about ham hocks.

May I suggest that such language debases the public discourse about a vital public activity. I much prefer John C. Calhoun's statement of 1817: "Let us, then, bind the Republic together with a perfect system of roads and canals."

In the main, the roads and canals are built, but they will be far from perfect if we do not maintain them.

We have witnesses here who can enlighten us in a number of areas. The first panels will consist of locally elected officials who are closest to the problems and must deal with them on a day to day basis. It is important for the record to demonstrate the economic and personal costs that continue long after the national news media has lost interest and moved on to the next story.

We will hear from the Federal Highway Administration and the American Association of State Highway and Transportation Officials who are intimately involved in developing the national bridge inspection program and who can testify to the condition and safety of the Nation's highways and bridges. I would also appreciate their thoughts on some of the broader issues I have outlined.

Finally, the New York State officials responsible for the management of the State's highways and bridges and for conducting the investigation into the bridge collapse will testify. I am looking forward to hearing the current status of the investigation as well as the State's plans to replace the bridge and bring to an end the personal and economic dislocations which have resulted.

I have asked that State officials remain after the hearing to answer questions of local concern.

Before the first witnesses begin their testimony, I want to thank several people for their assistance in making this hearing possible on short notice: Burt Derose, Principal of Amsterdam High School; Ronald Emery, Sheriff of Montgomery County; and, of course, Commissioner Franklin White of the New York State Department of Transportation.

Now, I will turn to Congressman Stratton first.

OPENING STATEMENT OF HON. SAMUEL S. STRATTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. **Stratton**. Thank you, Senator.

I think there has been a great deal of concern on exactly what has happened and why it happened, and there has obviously been a great deal of families that have been affected in this area. For example, one of the individuals who has been most affected is a gentleman who has lived on his farm, a truck farm, and one that has settled himself and family, kept himself and his family alive when the waters came down from the Schoharie Creek, and the whole top soil of the several acres that he has rusted away. This is the kind of thing that has affected a number of people around the area.

We also have a certain number of complaints and arguments of exactly what the proper detour should be geographically. With the new set-up where the detour is apparently scheduled to go, it is scheduled to go through a bridge which crosses the Schoharie Creek that is one lane, and the other lane will be a road passing on an original bridge, a railroad bridge, I think, that goes back to 1910.

So, there are a number of problems in the local area, and I think this may be beyond the scope of the committee's responsibility, but it has been a dramatic experience for all of the people in the area, as I am sure we all realize.

Senator MOYNIHAN. That is what we are here to ask of the State officials and the local elected officials. There has been an area unaffected by a viaduct over the Erie Canal which goes back quite a few years.

Congressman Boehlert?

OPENING STATEMENT OF HON. SHERWOOD L. BOEHLERT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. BOEHLERT. Thank you very much for conducting this hearing. I want to commend you.

I think we share a common interest. We want to find out what went wrong and why and what we need to do.

The experts tell us that we have approximately 130,000 bridges across this country where there are structural deficiencies of some sort. There are accidents waiting to happen, and I will do my best in the House to continue to adopt meaningful programs to make certain we don't have accidents of this nature in the future.

Senator MOYNIHAN. Indeed, that is a large issue concerning our roads and bridges in the country.

[Congressman Boehlert's written statement follows:]

I would first like to acknowledge the leadership of Senator Moynihan for holding this field hearing. I was grateful for his request to serve on this panel since the Schoharie Creek bridge lies on the border of my Congressional district and hope that through this event, we can determine the cause and recommend a way to avoid tragic events like this in the future.

The purpose of this hearing is not to point fingers at an individual, group or agency but to ensure that we uncover the cause of this tragedy and prevent a similar incident from disturbing the life and lives of another community.

Unfortunately, as we will discuss, the collapse of the Amsterdam bridge is not a unique situation but should serve as a case study of a much more widespread problem. According to the House Transportation Subcommittee, 131,000 bridges are considered structurally deficient out of the 575,000 nationwide. That is not just a statistic, that's a disgrace.

In fact, after hearing of the details of the Amsterdam bridge collapse, I was reminded of an all-too-similar incident which occurred less than four years ago on Interstate 95 in Connecticut. As early as 6 months before that bridge collapsed in 1983, inspectors had rated that Connecticut's bridge inspections system as excellent. New York's inspection standards are also excellent and rigorous as compared to many other states.

Some accidents cannot be averted. But we can't be patting ourselves on the back as our bridges collapse from underneath us. The inspections system—both on the federal standards-setting level and the state enforcement level—must be strengthened. For example, there is often a lag in communication between field inspectors and maintenance officials. That lag time should be eliminated.

There must also be increased communication between those who are contracted to build the bridge and the bridge inspectors. In the Connecticut case, state bridge inspectors were unaware of specific designs within the bridge structure and later testified that if they'd been aware of those designs, repairs would have been initiated to prevent a collapse.

Fortunately, Congress has recently passed lankmark legislation which will help improve bridge inspection. The recently-passed highway bill creates a National Bridge Inspection Program, led by the Secretary of Transportation, State Highway Departments and private groups and individuals. This program will provide detailed inspection methods which can be applied to all types of bridge design and geographic conditions. The bill also specifies the maximum time allowed between bridge inspections, lays out stringent inspection standards, and a procedure for training or retaining bridge inspectors.

There's obviously a problem when our inspection systems are being rated as excellent while disasters like this one continue to occur. But we are moving forward toward a better situation. With the various reforms being undertaken, I'm hopeful that New York will soon set the standard to which all other state inspection programs will aspire.

Senator MOYNIHAN. In looking around, I see Senator Hugh Farley and Assemblyman Paul Tonko who are here to open our hearing, and I am very happy they could come. It is very nice to have Senator Farley and Assemblyman Tonko representing the district.

We welcome you, gentlemen. According to this list which was prepared by our capable staff, Senator Farley, you are first. You can put your statement in the record, and you can proceed.

STATEMENT OF HON. HUGH FARLEY, STATE SENATOR, NEW YORK STATE

Mr. FARLEY. Thank you very much and good morning.

I am State Senator Hugh Farley, representing the 44th District which includes all the County of Montgomery, Fulton, Schenectady, Hamilton, and part of Saratoga.

Senator Moynihan, Congressman Stratton—who happens to be my Congressman and my dear friend—and Congressman Boehlert, thank you so much for coming into our area and showing concern for this terrible tragedy that has happened in upstate New York.

As the Senatorial representative of Montgomery County, I thank you for inviting me to participate in this hearing for the purpose of discussing the recent flood and collapse of the New York State Thruway bridge and the effects each has had on the local community.

Commencing on April 4, 1987, the County of Montgomery and the adjoining areas sustained severe flooding caused by a coastal storm system that produced up to 9 inches of rain and, coupled with excessive snow melt, caused extensive damage to residences, businesses, and agricultural property as well as to numerous roads and bridges.

The widespread major flooding which began on April 4 and produced rain almost continuously through April 7 resulted in the following specific impact on area residents:

The need for evacuation of several hundred residents and the opening of numerous shelters to provide housing, mass feeding, and other care;

A requirement for the provision of permanent housing for numerous local families whose housing units were destroyed;

Damage of varying degrees to numerous agricultural and other local businesses;

Damage to numerous major and secondary highways and bridges;

Disruption of local government emergency services resulting from widespread damage to roads and bridges;

Loss of the continuity of a major interstate roadway as a result of the New York State Thruway bridge collapse, with the imposition of a severe burden on other State and county-owned roads and bridges; and

Massive deployment of State and county resources for disaster response and recovery efforts.

I understand Governor Cuomo has already provided to the Federal Government initial damage estimates approximating $33 million. This initial estimate is, of course, exclusive of an estimated $32.5 million of physical damage to the New York State Thruway which sustained the bridge collapse. Nor does it account for an as yet undetermined amount of insured damage in the private, business, and agricultural communities. Montgomery County alone has estimated some $82 million of economic loss to businesses within the County due to the Thruway bridge collapse.

As a result of traffic being rerouted around the closed interstate, local bridges are and continue to be in danger of being overloaded. The State Department of Transportation closed a 93-year-old bridge in Fonda a few days after it became an official detour. Then, one week after the major disaster, another closed bridge three miles up stream collapsed into the Schoharie Creek. That 1927 bridge, Mill Point, with three 120-foot center spans had been closed, fortunately, by the Department when the creek reached the lower chord of the trusses.

Following the collapse of the second bridge, members of the rural agricultural community continue to be adversely affected. Although the total amount of damage to local dairymen has not as yet been ascertained, farmers throughout the area have suffered substantial losses of income due to the inability of trucks to reach farms to pick up milk shipments.

Incidentally, I understand that individuals residing on Hughes Road in the Town of Glen near the site of the collapsed Mill Point Bridge have not received mail for a period in excess of two weeks. Anything you gentlemen could do to expedite the delivery of the United States mail to these residents would be greatly appreciated.

As you perhaps know, the State has recently promulgated a temporary Thruway detour that will accommodate both eastbound and westbound traffic at or near Fort Hunter. As a result of the planned detour, numerous property owners will be called upon to make many sacrifices in order that intrastate and interstate traffic can be resumed on the New York State Thruway.

I will soon call upon the Department of Transportation and Thruway Authority to ensure that the proposed taking of land by the State for this detour does not severely impact the business and residential properties of Montgomery County residents, and I will further ask their full cooperation in determining ways in which residents may benefit from the disruption and aesthetic damages they will endure for the period during which this detour is contemplated.

Although Montgomery County is indeed a rural upstate community, there is little question but what we have some of the greatest tourist attractions, largest dairy and crop farming operations in the country, and numerous businesses which are directly involved in interstate commerce, all of whom will be severely impacted by this tragedy for some time to come.

As the senatorial representative of this district, I humbly ask that you seek the necessary expertise of the Federal Government in evaluating the applicability of the Community Disaster Loan Program as an alternative source of financial assistance to those local units of government that continue to experience severe economic effects.

I think you will all agree that this catastrophe is of such severity and magnitude that effective response is beyond the capabilities of the State of New York and the affected local governments and that supplementary Federal assistance is vital to save lives and to provide emergency measures to protect public health, safety, and property.

Thank you very much.

Senator **Moynihan**. Thank you, Senator.

Might I say that I cannot be entirely sure of what will come of this hearing, but I think that with the dean of our delegation present and I being senior Senator and Representative Boehlert being the most dynamic member of our delegation and generation, I think we can be sure that mail will get delivered on Hughes Road in the town of Glen. I am going to see if we can't have that done by midday.

Mr. **Stratton**. Perhaps by 11 a.m.

Senator **Moynihan**. I see John Loewy of my staff is here. John, get on the phone and tell them to get the mail delivered.

Mr. **Farley**. Now, that is action. It may not be much, but it is something.

Senator **Moynihan**. I think our pattern is to ask our panel to complete their statements. So, Paul Tonko, will you proceed?

STATEMENT OF HON. PAUL TONKO, ASSEMBLYMAN, STATE OF NEW YORK

Mr. **Tonko**. Thank you, Senator Moynihan. Congressman Stratton, dean of the New York State congressional delegation, and Representative Boehlert, good morning.

I am Paul Tonko, and I am the Assembly representative for the 105th Assembly District which includes Schoharie County and parts of Montgomery, Albany and Schenectady Counties.

I would like to thank you, Senator Moynihan, for the opportunity to speak before the Senate Subcommittee on Water Resources, Transportation, and Infrastructure. Additionally, I would like to commend you on hosting this meeting in Amsterdam near the sites of recent tragedies in our area.

Although the flooding and subsequent bridge collapses have created ramifications throughout the State, it is this area that has been hit hardest. As the devastation begins to slowly fade, we here in Montgomery and Schoharie Counties must begin to rebuild. Homes, businesses, crop lands, and our infrastructure must be repaired, and in a timely manner, for every day, week, and month that it takes us to begin this process, money is lost in agriculture, tourism, and local business. This is something we simply cannot afford.

The estimates on damage to this area are striking. The State Emergency Management Office has set an initial estimate at $34 million. This excludes the rebuilding of the Thruway Bridge, estimated at another $32 million. In Montgomery and Schoharie Counties alone, 30 homes were destroyed and 339 suffered significant damage. Ten people have died as a result of this flooding, and seventeen people were injured. Over 110 people were put up in shelters until they could return to their homes, and approximately 550 people were evacuated from the immediate area.

The costs to individuals alone are staggering. In Schoharie County where assessments are still on-going, the estimates for public assistance is $833,806. In Montgomery County, assessments are continuing as well. However, the estimate for public assistance is $881,953. The State Emergency Management Office estimates a need of $1.105 million in home loans for the two counties.

Small businesses suffered as well. There are 42 businesses which incurred physical damage within Schoharie County. The State Emergency Management Office projects the need for $850,000 in Small Business Administration low interest loans.

Perhaps the hardest hit has been the agricultural businesses. In Schoharie County, at least 25 head of cattle have perished, and both the Hanson and Guernsey Nurseries in Middleburgh lost significant inventories. Over 3,000 acres of farmland have been reported eroded and will require the removal of debris. The State Emergency Management Office estimates the need in loans to the agricultural community to be over $1.742 million.

In one area, 8 farms have been literally split in half due to the Mill Point Bridge collapse. The bridge and nearby roads have been washed out. The Department of Transportation estimates more than $3 million is required to rebuild an adequate bridge and refurbish the washed out roads.

Not only has the flooding and the bridge collapse inflicted physical damage but economic damage as well which will be felt one or even two years from now. Schoharie and Montgomery Counties yield thousands of dollars in tourist trade each summer. With the collapse of the bridges and washouts of local roads, this will severely hinder our tourism industry and affect local historic sites, parks, hotels, and motels, campsites, restaurants, and various retail and service industries.

Montgomery County has estimated its loss to be $82 million in one year alone due to the bridge collapse. Schoharie County is continuing to formulate its estimate. The bridge collapses have hit our area hard, not just in this time of reconstruction, but in the years to come.

Area trucking companies are suffering as well. Of the major companies, estimates of over $1 million per year have been established.

The cost of breaking down the once tandem rigs, two trailers and one cab, and rerouting over roads which are capable of supporting the truck weights is $4,300 per day for just one company. Even smaller companies are reporting losses of $1,000 to $3,000 per day.

These rates are currently being absorbed by the trucking companies, but it is obvious that no business, regardless of its profit intake, can afford a $1 million annual loss. It takes only simply economics to figure out that these costs will eventually be added into product cost and, in turn, come out of consumers' pockets. These consumers are found throughout New York State and other States. It shows that this is not a local issue and must be treated as a national situation.

On the State end, we are working to control flooding the best we can. Assemblyman Ron Tocci and I introduced Assembly Bill 2576 this legislative session which would establish a State/county flood control planning program. The legislation would allow any county to apply for matching funds. In addition, with the assistance of Senator Charles Cook, over $140,000 has been appropriated in the State budget for preliminary flood control planning projects in Schoharie County.

Also, I am preparing special legislation which would appropriate $500,000 to the State Department of Environmental Conservation to fund flood control projects in Schoharie and Montgomery Counties.

Flood monitoring is another important area of concern. I have been in contact with appropriate State agencies to garner their support to participate in the National Weather Service flood monitoring system. This system is necessary in order to better project the flood prone regions of Montgomery and Schoharie Counties. Hopefully, with the help fo Senator Moynihan, we will be able to place greater emphasis on programs that would help avoid a repeat of this year's flood damage.

I think that as we examine the impact of this disaster, we must ask ourselves how it happened and, more importantly, how we can eliminate the possibility of its occurring again. The collapse prompted an intensive study of all area bridges, and several were closed as a result. It makes us, as a State, take a long hard look at our highway system.

However, the primary outcome of subsequent action should not be to find fault in the bridge design or initial construction but to ensure that we improve our current bridge and road system. Let us learn from our mistakes, not anguish over them.

I want to commend Governor Cuomo on his great work in the Rebuild New York Program and acknowledge the legislative support from the State Assembly and Senate. Over $7 billion will be spent in the end to repair and expand our highway system. However, in 1989, this 6-year initiative will come to an end, and we, as a State, will face an important decision: how to continue and expand this program.

As we know, this past weekend, a report has been issued which will offer some $9 million in projected funding to deal with phase two of rebuilding New York infrastructures. We hope we in the State will do our share.

Now, over 10 percent of our existing system is rated deficient, and 25 percent is currently considered fair. It is important to note that the New York State Thruway system was not included in the Rebuild New York Program. The Thruway bridge was considered in satisfactory condition, and although extraordinary flood conditions led to its collapse, I think it makes us wonder how bad is deficient.

The outlook for our roads is not good. By 1990, available annual funding for State highway pavement will drop to $510,000. At this level, deficient State highways will rise from 11 percent to 18 percent of all roads over the following five years.

To simply maintain the current level of conditions, we need $680 million dedicated to repaving our highways.

New York's bridges face a similar problem. In 1990, available funds for State bridge needs are projected to drop to $165 million. At this level, the deficiency rating would increase by 23 percent in five years. We need $365 million to keep bridges in their current condition.

Not only will the State lose funds due to the expiration of our Rebuild New York Bond, but monies from this bond were used to match Federal funds. Without the State's portion, these Federal funds will not be received, exacerbating the problem. Equally important is the fact that we cannot afford further reductions in Federal transportation funds.

Localities are facing similar concerns. Their budgets cannot meet the need to upgrade roads to adequate conditions, and local officials look to the State to help. However, if we can barely maintain our State highways, how can we afford to help local governments? It is obvious that this help must come from the Federal Government.

Just recently, Congress overrode what President Reagan termed a "budget busting, pork barrel" piece of legislation, and I thank you for your efforts in this regard, Senator. It should be noted that the States will receive $1 billion less each year under the new law than in previous years. Our State simply does not have the resources to rebuild and maintain every bridge and highway without strong Federal support.

Clearly, the bridge collapses remind us of the importance of maintaining our transportation system. As elected officials, the general public becomes our responsibility. The average driver must be secure in knowing that the road he or she is traveling on is safe and that any bridges crossed will not collapse.

I know that I cannot let that driver down. I cannot understand how the President can refuse to provide States with needed Federal monies to improve their infrastructure. Mr. President, I think the maintenance of our nation's roads and bridges deserved every attention.

A re-shifting of our priorities is extremely important at this time. It is imperative that we start planning now for our future transportation needs.

Let the bridge collapse be a lesson we do not have to repeat. By combining the commitment of State funds and Federal funds, we can have highways and bridges with conditions of zero percent deficient and 100 percent trustworthy.

We can make New York stronger in one more category—the quality of our roads and bridges.

Finally, we ask, since the records have been sent to Washington by the State Government—namely, Governor Cuomo—in relation to the amount of damages incurred here in the local area, that you gentlemen will pay strict attention to that. If any message can be taken back to Washington for Montgomery County here this morning, we need that assistance in terms of dollars as quickly as possible.

Thank you so much for your interest.

Senator **Moynihan**. Thank you, sir.

Now, my colleague and dean, Congressman Stratton.

Mr. **Stratton**. I think we ought to hear from the State people with respect to exactly who is responsible for the collapse of any bridge on the Thruway. Is this a Federal responsibility, or is this a State responsibility?

Mr. **Farley**. It is my understanding, Congressman, of course, the bridge that collapsed was part of the Thruway Authority. It was not a bridge inspected by the Department of Transportation by their own inspection program.

It is my understanding they have insurance on it—not adequate. I believe it is perhaps maybe a third of what the cost of replacement would be, but the concern we have—well, the Mill Point Bridge, of course, was a bridge that the State of New York is going to have to take responsibility for—but the overloading and deteriorating conditions you are going to be hearing from the Department of Transportation and New York Thruway Authority. At a hearing we had, it is my understanding close to one-third of our bridges in this State are deficient right now.

Mr. **Stratton**. Senator, if I am not right, correct me, but it seems to me as a result of unusual initiative, the State of New York got back a substantial sum of money because of the fact that we had constructed the Thruway before the Federal interstate highway program was under way, and the State had never been reimbursed for the funds that were expended on the Thruway, although the State Thruway is an interstate operation at the present time.

Wasn't there a substantial amount of money that you succeeded in getting for the State?

Senator **Moynihan**. Eventually, and through Hugh Carey who was responsible. That is an issue we will get to.

I think the activity of the Thruway Authority in this State is perhaps the greatest economic misfortune to come to New York in the second half of the century. We chose to build the first segment, from Yonkers to Buffalo, 500 miles, and paid tolls for it, now we pay taxes to build the exact program for free use throughout the country.

There was a great civil engineer, Burt Tallman, who built the first segment of the Thruway in 1956, and at that time, there was talk about taking the tolls off and the need to have toll-free roads. However, we did not.

In 1979, I got legislation passed that said the Thruway would be receiving its share of maintenance monies to keep the bridges from falling down, resurfacing, rehabilitating, and reconstruction. But the Thruway absolutely wouldn't take the money. It much preferred the tolls.

In begging them to take Federal money, I don't believe we have any idea how much damage and hurt the Thruway Authority has done to New York over the years. An arrangement was to be made to take the tolls off the Thruway and bonds to pay, but the Thruway Authority never wanted to take those tolls off. They wanted them to be there forever. They absolutely turned away Thruway money.

They did nothing. New York State has done nothing to consummate this—no legislative action whatever. In the bill I passed from this committee 8 years ago, they would have received Federal monies, but the legislature hasn't done anything to say yes, the tolls would come off.

Gentlemen, do you think those tolls should be there?

Mr. **Tonko**. I think it would be devastating to the Mohawk Valley to try to recoup from an economic disaster. I would follow the Transportation Committee's advice on the issue.

Senator **Moynihan**. You have to fight for it, or else the tolls will be there forever.

They wouldn't take the Federal money. I don't think you can imagine anything that has done more damage to industry in New York State than the fact the New York State Thruway Authority has been collecting those tolls while using our taxes to build roads and so forth. As I say, this is the greatest economic misfortune to come to New York State in the second half of the 20th century.

Mr. **Farley**. I would tend to agree with you, Senator. There is nothing more permanent than a temporary tax or revenue for an authority that had been created, particularly one that is producing revenue. I think it is an economic disincentive to have to pay your way to get through it, and it is something that is going to be difficult, I think, in the years ahead because of the fact it is going to cost New York State more, even with Federal money, with Federal help, to maintain that roadway.

However, I certainly don't know what Governor Cuomo's position is on this, and I hesitate to speak for him on the discontinuance, but I certainly personally am supportive of what you are saying, and I think it is something we ought to get on with. It was my understanding in the early 1990s, as a result of your agreement with Governor Carey, tolls were going to be removed.

Senator **Moynihan**. Right. May I say Governor Cuomo is entirely in favor of taking the tolls off the Thruway. That doesn't mean the Thruway Authority is, and it doesn't mean the legislature is, and I think somebody has to show some fire in their belly or they will be there forever.

Mr. **Tonko**. What guarantee would there be in terms of funding and time span?

Senator **Moynihan**. Well, under the present management, the Thruway will receive a moderate basic sum, about half of our present outlays. This would be from a trust fund system, and our problem in the Thruway, if I may, has always been that it is a political system.

I have an explicit memory of this. A very fine man, Bixby, who was Secretary to Governor Dewey showed me the Governor's office, showed me the telephone book, showed me where the elevators were and said, "Good luck to you, young fellow." I said, "Mr. Bixby, where are you going?" He said, "I am going to be Chairman of the Thruway Authority." So, it has been a political job ever since.

Mr. **Tonko**. You have long been a champion of bringing New York State its fair share of Federal help and often have been outspoken on New York in getting its fair share. Would this assumption that carries over into the transportation dollars—would that apply also to the Thruway?

Senator **Moynihan**. Exactly.

Mr. **Tonko**. As a State, often we are told that we don't get our fair share. How can we eliminate that concern?

Senator **Moynihan**. Well, in 1956 when the legislation was passed, it would have taken five minutes' effort.

We were the Empire State, and we have 45 Members, Representatives. When the Thruway construction began, we had 29.

Mr. BOEHLERT. I agree.

Mr. STRATTON. One thing we ought to recognize is that if you take off the tolls, you are going to take off the toll collectors, and there are a number of people who make their livelihood as collectors on the Thruway. You are going to be taking jobs away from a lot of people. I don't know how many toll collectors there are, but they must add up to a substantial figure.

Senator MOYNIHAN. You wouldn't do away with these good people, these capable public employees, more reason to begin a transition now? If you want to put up a plan in Amsterdam or Schenectady, keep in mind there are going to be no tolls for the Thruway in a very few years.

Mr. FARLEY. I know that Chairman Bersani of the Thruway Authority is going to be anxious to talk to you here. Certainly, Senator Moynihan, this is a significant factor and something that the legislature should get into, at least look at. I can assure you we will.

Going back to the immediate problem, speaking as a State Senator, the bridge collapse was unfortunate, but as far as the State of New York is concerned, it was better that it was the New York State Thruway Authority bridge that fell down as opposed to the State of New York or the Federal Government. But let's hope that all of this can become part of the State highway system. Nobody likes paying tolls and, as was mentioned, I think it is an economic disincentive to New York State.

Mr. BOEHLERT. I just wanted to agree 110 percent with what Senator Moynihan has said. I think tolls on the New York Thruway are an economic disincentive to developing the State.

I have one question: has the Governor sent a message to the legislature requesting tolls be removed?

Mr. FARLEY. I am quite confident he has not at this time.

Senator MOYNIHAN. But he hasn't said the agreement isn't there to the legislature.

Mr. FARLEY. It was my understanding that the agreement was in place.

Senator MOYNIHAN. We signed it.

Mr. FARLEY. I remember some date in the 1990s, but I don't see an awful lot of people getting ready to prepare for that; starting the transition.

Senator MOYNIHAN. Mr. Bixby showed me the telephone book. He also opened a safe in the Governor's office where he kept a pillow that Governor Lehman used for a nap.

Mr. TONKO. I would like to move from the Thruway in particular to a broader scope of infrastructure, if we might, and not just focus on that one system.

The statewide Governor's panel last week suggested a number of ways to raise dollars to address the refurbishment of roads and bridges. My concern is that Federal reports indicate if we are not the best system of inspection or if we do not have the best system of inspection in the country, we are pretty close to it.

That does scare me. As a person who has traveled extensively through other States and this State and knowing the number of people that depend on the roads, I would suggest that we look at the way we inspect, look at the standards that apply to the inspection of bridges and also ask that transportation be given a very high priority in the scheme of things in Washington.

I think there is no way the States can bear it alone in this regard. That broad base from Federal lending addressing the situation is important.

If we have the best system of inspection here in the State, and this tragedy has occurred, and we do acknowledge a number of bridges are in need of repair, then what is happening in other States? I think it is of extreme national concern. That should prevail, and I would just like to add that.

Senator **MOYNIHAN**. May I state a point. When we constituted the Subcommittee on Water Resources, Transportation, and Infrastructure.

Mr. **TONKO**. The Northeast is, in many ways, the oldest area in the country, and we are facing this problem first, but it will follow in a decade or the decade to follow us, and that concern will be there.

Mr. **STRATTON**. I think you ought to remember that—and I think Senator Farley and perhaps you mentioned it—when you come up with a piece of legislation to build roads or to build bridges or to build infrastructure, whatever that word really means.

Mr. **FARLEY**. Yes, sir.

Mr. **STRATTON**. That is what the President did in the legislation. We overrode his veto and, fortunately, we did override it at that time, because some funds to make up for the disaster here in this area are going to have to come out of that bill.

Mr. **TONKO**. May I commend you for taking the appropriate action. It was ironic that days after that activity occurred——

Mr. **BOEHLERT**. One point, if I may, that is important at this juncture. I voted to override the President's veto. I thought it was ill advised. The veto had nothing to do with bridge safety.

Senator **MOYNIHAN**. Thank you very much.

Mr. **TONKO**. Thank you.

Senator **MOYNIHAN**. We have another panel of two experts: Mr. Rex Leathers is Associate Administrator for Engineering and Program Development, Federal Highway Administration. He is accompanied by Mr. Stanley Gordon who is chief of the Bridge Division. We also have Mr. Jack Freidenrich who is Vice Chairman of the Standing Committee on Highways of the American Association of State Highway and Transportation Officials. He is accompanied by Mr. Francis Francois who is Executive Director.

Gentlemen, if you will sort yourselves out, first we have Mr. Leathers and Mr. Freidenrich and Mr. Francois.

STATEMENT OF REX LEATHERS, ASSOCIATE ADMINISTRATOR FOR ENGINEERING AND PROGRAM DEVELOPMENT, FEDERAL HIGHWAY ADMINISTRATION, ACCOMPANIED BY, STANLEY GORDON, CHIEF, BRIDGE DIVISION

Mr. **LEATHERS**. We are happy to be here this morning at this hearing to try to determine the cause of and result of what will happen in the future.

With that, I will submit my prepared statement, and I would be happy to answer any questions you or the panel may have.

Senator MOYNIHAN. Mr. Freidenrich?

STATEMENT OF JACK FREIDENRICH, VICE CHAIRMAN, STANDING COMMITTEE ON HIGHWAYS, AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS ACCOMPANIED BY FRANCIS B. FRANCOIS, EXECUTIVE DIRECTOR

Mr. FREIDENRICH. My name is Jack Freidenrich. I am the State highway engineer for the New Jersey State Department of Transportation. I am also the former chairman of the AASHTO Highway Subcommittee on Bridges and Structures and the current vice chairman of the AASHTO Standing Committee on Highways which is the parent committee of that subcommittee.

With me today is the executive director of AASHTO, Francis B. Francois.

Mr. Chairman, we are pleased to appear upon your request to provide testimony related to the matters in your letter. While we do not have firsthand information about the specific incident that gave rise to this hearing, the collapse of the bridge on the Governor Thomas E. Dewey Thruway over the Schoharie Creek, we are pleased to provide some general comments, and we will respond to any questions to the best of our ability.

The letter requesting our appearance at this hearing was addressed to a number of topics and, accordingly, so will be this testimony. I will try to summarize the statement within the time allotted.

Let me begin by discussing AASHTO and its process for the development of voluntary construction and inspection standards that may pertain to the specific incident of the bridge collapse and related issues.

Founded in 1914, AASHTO represents the departments concerned with transportation and highways in the 50 States, the District of Columbia, and Puerto Rico to foster the development, operation, and maintenance of an integrated national transportation system. The active members of AASHTO are the duly constituted heads and other chief directing officials of the member transportation and highway agencies.

The AASHTO committee structure consists of a policy and an executive committee, and various standing committees each of which have several subcommittees. The Subcommittee on Bridges and Structures has a member from each of the member departments, and reports to the Standing Committee on Highways.

Among its activities, one role of AASHTO is the development and promulgation of voluntary technical standards guiding the planning, design, construction, and operation of highways and their appurtenances, including bridges and structures. The comparison of early highway building and operating experiences in the several States and the establishment of norms and standards through these experiences and through practical related research was, indeed, an important reason for the formation of AASHTO, then called AASHO back in 1914.

This practice of assembling, organizing, and then promulgating the continually growing body of knowledge which we term highway engineering continues as one of AASHTO's most strenuous and most vital activities.

Mr. Chairman, it may be helpful for me to briefly review how the association conducts its voluntary technical standard activity.

The principal origin of our work in the development and refinement of technical highway engineering standards is our subcommittees under the Standing Committee on Highways. Most of the subcommittees consist of the chief official in each of our member departments having the responsibility for the subject in question in his or her respective State.

In the case of bridges and structures, for example, the Highway Subcommittee on Bridges and Structures consists of the chief bridge engineer in each of the 52 member agencies of AASHTO.

Through a system of individual effort, task force activities, and requested research, suggested changes, additions, and deletions to the several AASHTO published technical documents under the subcommittee's jurisdiction are developed and proposed for consideration. To be adopted by AASHTO, proposed voluntary standards undergo a balloting process.

An affirmative vote by a two-thirds majority of the subcommittee is required to approve a recommended standard. The approved document is then referred to the Standing Committee on Highways for consideration, and if the standing committee approves, it will then forward the document to the AASHTO executive committee.

If the document has the status of a technical policy, after approval by the executive committee, it is finally taken up by our Policy Committee which is the supreme committee of AASHTO, consisting of the chief administrative officers of the 52 member agencies. At all these levels, a two-thirds majority requirement is required for approval.

The result is a process which thoroughly but deliberately advances the state of the art of highway engineering, maintains a national level perspective, and recognizes that engineering is simultaneously both an art and a science.

The documents maintained by AASHTO in the area of bridges and structures include Standard Specifications for Highway Bridges, which is modified and updated each year through an interim publication process; Manual for Maintenance Inspection of Bridges, which contains our recommended procedures and frequencies for inspecting the half-million plus bridges in this country for functional adequacy and safety; and some 9 or 10 lesser standards and guides related to various aspects of highway bridges and structures.

With respect to the yearly interim changes to the Standard Specifications for Highway Bridges, AASHTO has delegated the responsibility for approving the annual changes to the Highway Subcommittee on Bridges and Structures, but the two-thirds affirmative vote is still required.

It needs to be noted that AASHTO's voluntary standard and policy documents are not themselves binding upon the States since the association has no legal power to this effect. It is up to each individual State to consider the AASHTO recommendations and take appropriate action thereon.

In many instances, the AASHTO document is simply adopted by the State, and in other instances, the State might use it as the basis for developing its own standards. In the instance of certain major publications, the Federal Highway Administration may go through a rulemaking procedure based on an AASHTO document. In most cases, the FHwA will review AASHTO documents, and if they find them acceptable, will list them as being suitable for use on Federal-aid highway projects.

Unfortunately, AASHTO is in no position to comment on the reasons for the collapse of the bridge on the New York Thruway crossing the Schoharie Creek. Other agencies having the resources to investigate the matter, including, we understand, the National Transportation Safety Board, the Federal Highway Administration, the New York Disaster Preparedness Commission, and the Thruway Authority itself are examining the site, and their findings will undoubtedly be assembled and disseminated in due course. Any comments prior to that time would be necessarily speculative and inconclusive.

One of the subjects of interest in this bridge collapse is the matter of conducting underwater inspections of bridge structures, and in this area, AASHTO has been active.

In 1986, following the procedure outlined earlier, AASHTO adopted a new specification on underwater inspections. A key provision in the adopted change is as follows:

> Underwater inspection shall be considered for those structures where the depth of water prohibits a visible inspection of the substructure. This will normally be required at intervals not to exceed 5 years, unless the inspection agency has documented data to support intervals greater than this period.

The language was also adopted stating, in part:

> Underwater inspection is the combined effort of sounding to locate the channel bottom, probing to determine deterioration and losses, and/or diving to visually inspect and measure bridge components. It should be an integral part of a bridge inspection plan. Permanently submerged structural, foundation, and other components should be inspected when there is reason to believe that a problem exists.

Other changes included special reference to possible corrosion damage on steel or concrete encased steel piles in brackish or polluted waters.

The Subcommittee on Bridges and Structures met just over a week ago in San Diego with some 49 member departments in attendance. Among the many items taken up for consideration were additional items relating to the underwater inspection of bridges. Further strengthening of existing language dealing with possible corrosion problems was approved at the San Diego meeting for balloting this fall.

This recent activity indicates the concern of our member departments about the conduct of adequate bridge inspections, and our involvement in this area is on a continuing basis.

I would like our statement to be submitted to the record. Lack of time dictates this oral summary be brought to a close.

Mr. Chairman, we trust this testimony responds to your request and that it will assist the subcommittee. Recognizing that you may have specific inquiries beyond the general concerns expressed in your letter, Mr. Francois and I will be pleased to respond to questions, either now or later in writing.

Thank you, sir.

Senator **Moynihan**. Well, let's begin with Congressman Stratton.

Mr. **Stratton**. I gather the major problem is one that has not, apparently, been addressed by the American Association of State Highway and Transportation Officials, namely, the underwater activities surrounding the various bridges that are involved, and I think, very clearly, that the scouring operation on the bridge that has collapsed was almost unique but, obviously, a result of something that presumably would be hard to detect in an ordinary inspection.

Isn't that what is the major problem?

Mr. **Leathers**. I think you stated it quite well. A matter of detecting, as you mentioned, scour from a routine inspection is very difficult to determine. AASHTO has had a bridge inspection program for years and has suggested underwater inspections at 5-year intervals, but they do address the problem.

Mr. **Stratton**. I do not know where we come out. What inspections of this particular bridge were made?

Mr. **Leathers**. I believe the New York Thruway people are in the best position to say when the last inspection was made. Whether they addressed the underwater condition I cannot say.

Senator **Moynihan**. But in 1986, AASHTO did specifically adopt a new bridge specification calling for underwater inspections at intervals not to exceed 5 years.

Mr. **Freidenrich**. Mr. Chairman, there have been references for need to have underwater inspections long preceding 1986. In 1986, further consideration was given and there were some changes further emphasizing the need to make underwater inspections.

Senator **Moynihan**. Could I ask, what does that involve? Does it mean to just put out a scuba diver, send somebody down? There are obviously many different levels of water involved in the Schoharie Creek, and I believe under normal circumstances, it is not more than 6, 7, or 8 feet deep at that bridge site.

Mr. **Freidenrich**. Mr. Chairman, you are absolutely right. There are several different levels. There are some bridges over waterways that you can walk across the waterway and see directly down to the foundation of the bridge and feel it and make your determinations that way. There are other situations where you take sound readings, you probe the bottom, and finally, if you detect any indication of a problem, it becomes necessary for you to make an underwater inspection.

Mr. **Boehlert**. Mr. Leathers, I serve on the House Committee on Public Works and Transportation, and in preparation for this session, I have had my staff call to check, and we were advised that there are something like 575,000 bridges across America. It is estimated that about 130,000 have some sort of defect—information developed by the Federal Government.

Are you familiar with those statistics?

Mr. **Leathers**. Yes.

Mr. **Boehlert**. Isn't that scary?

Mr. **Leathers**. Pardon?

Mr. **Boehlert**. Isn't that scary?

Mr. LEATHERS. You must look at the 130,000 structurally deficient bridges by what deficiency means. It does not mean those bridges are in danger of collapse. It probably means that the bridges should be posted to carry lighter vehicles.

Mr. BOEHLERT. On the other hand, the day before the tragic Schoharie Bridge collapse, if that bridge is one of the 130,000, you say that——

Mr. LEATHERS. That is probably correct, but you must be very careful how you use the definition of deficient bridge.

Senator MOYNIHAN. Why don't you help us in making a record here?

Mr. LEATHERS. Mr. Gordon who runs the national bridge inspection program will explain it.

Mr. GORDON. Well, the deficiencies in this country are broken down into two categories. There are structural——

Mr. BOEHLERT. Excuse me. I want to give you an update on the mail delivery. I had a member of my staff call the Postmaster, and the Postmaster couldn't talk to my staff because he was talking to the Senator's staff.

Mr. GORDON. Regarding deficient bridges, there are two categories. There is the structural deficient category and the functionally obsolete category.

What the first category in general indicates that the bridge can no longer carry the live load of the system of which it is an integral part. By no means is it unsafe. It only means that because of structural deficiencies in various components of the structure the bridge cannot carry the same load limit as the highway on which it is an integral part.

Heavy trucks go over these bridges with disregard for the safe load limit at which these bridges are posted.

Mr. BOEHLERT. Are you suggesting because it would be posted that it could only handle a certain weight we should all feel a little more secure?

Mr. GORDON. No.

Mr. BOEHLERT. It bothers me to think in terms of the United States Government saying there are 130,000 bridges across America that are potentially dangerous to the traveling public.

Mr. GORDON. There are all kinds of deficiencies within that group, and I would say a small percentage of those really require significant low limit posting. Many of them have to be posted, but they are posted in many cases at an operational level which permits a greater number of bridges to carry heavy loads but reduces the service life of the structure.

Mr. LEATHERS. Also, you must keep in mind that through an inventory and inspection process, the State highway agencies make the determination whether or not the bridge should be posted. That is probably the most direct approach we would use. It would take some action to improve that structure immediately so that it would be able to carry its normal load.

Mr. BOEHLERT. I am just curious, how many bridges a year would you say are closed as a result of an action taken because a bridge is unsafe and must be closed? Would it be 2, 5, 100, 1,000? I am trying to get a feel for it.

Mr. LEATHERS. I don't believe I could give you a good estimate.

Senator MOYNIHAN. You could develop that? *

Mr. LEATHERS. Certainly, realizing many of these bridges are under the jurisdiction of all levels of government, and all of those are within our inventory. But we have no jurisdiction over them directly. In many instances, the States don't have jurisdiction.

Mr. BOEHLERT. Pardon me, but all eyes are focused on New York right now. There are a lot of bridges of the same vintage, same design. My question is, Do we have the same problems with these bridges? Same potential for disaster?

Mr. LEATHERS. When you say potential, I could accept that. We don't have a serious problem in local conditions that exist in any given stream. It would have to be very similar to the conditions which were found in the Schoharie Creek. Then we could have the same problem, and same disaster potential.

This would be for the bridge engineers' inspection of bridges in various States to make that determination from their knowledge of the stream bed, rainfall expected, these sorts of things. They can make that type of judgment. I don't think we should say there is a danger out there. We shouldn't panic in driving over any bridge in the State.

Mr. STRATTON. Shouldn't there be a system of examining the kind of water that is under the bridge? For example, in this particular case, it is my understanding that they had calaclymo since that went totally into the creek and went down a massive hole. I don't know how far down it goes.

The problem is not so much the bridge but the creek that it went through, all of its idiosyncrasies in terms of speed at various periods during the year, bridge inspection without any water at all. Maybe this is encompassed under water examination. The bottom of the creek apparently doesn't end. It goes down farther, and in that kind of situation, it is almost impossible, apparently, to develop a pillar that can survive a rather rapid rainfall.

Mr. GORDON. Well, you can do a scour analysis, using, the soil conditions, the volume of water, and the speed of water that goes through the particular bridge opening. You can do a scour analysis to determine the depth of the scour hole.

The biggest problem is that the damage is done, at the time of highest water, when you get your maximum scouring and, with the highest water, it is not very practical to go ahead and measure the depth of scouring. We are developing new radar devices for attempting to do this.

However, after the water has subsided and you are able to go in and do soundings either with sound meters or lead lines, by now the scour holes have filled up with granular material being transported from up stream.

Senator MOYNIHAN. You are saying this is not a linear process?

Mr. GORDON. In many cases, yes; in some cases, no. Sometimes you can go in and see a scour hole, but in many cases, by the time the water level has come down sufficiently, the scour hole is filled in with new material.

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* See response to question 11 of responses to additional questions, p. 73.

Senator **Moynihan**. Well, with the high water, it is most difficult to find out what is going on.

Mr. **Gordon**. Right.

Senator **Moynihan**. You say you are getting radar devices and electronic techniques?

Mr. **Gordon**. In the early days of less sophisticated computation and measuring devices, the rule of thumb used in scouring streams was, if the water went up to a certain elevation, you could expect a scour hole an equal distance down. That was a good rule of thumb. For example, if the water went up 18 feet, you may get a scour hole 18 feet.

What the designers would usually do is they would make sure their foundations were below the scour depth when designing in a scourable situation.

Senator **Moynihan**. This particular bridge was actually set in rock. Rocks can't be more than a foot off the stream bed.

Mr. **Gordon**. That is true, but the plans made available to me did not show the bridge to be founded on rock.

Senator **Moynihan**. I see nobody here knows quite what the precise plan for this particular bridge was.

Mr. **Freidenrich**. No, sir. I believe when the Thruway Authority or the New York State Department of Transportation appears before you, they will be able to respond to that question.

Mr. **Boehlert**. Just one last question, Mr. Leathers. Is there anything more you need from us in terms of Federal Highway Administration requiring more activity from Congress? Is it more money? Do you have resources necessary to complete the program in terms of development of technology to deal with the scouring issue for example?

Mr. **Leathers**. No, the Congress has been very good to us in the bridge area over the years—$8 billion for the next 5 years. Obviously, I think we all could use more money in the program.

Mr. **Boehlert**. We probably should address that issue.

I would ask what your response is going to be. You have a lot of bridges you would like to have replaced. I can well understand that, but my concern goes even deeper. Do you have money for the research and development? The technology is changing all the time.

Mr. **Leathers**. We have a very extensive bridge inspection program. The State is also working with their own dollars.

Mr. **Boehlert**. Do you feel you have adequate resources for that program?

Mr. **Leathers**. Yes. I believe so. There are some areas in the program—again, Mr. Freidenrich can address some of our concerns about the speed at which we are able to develop the bridge project. Anyway, they are going to demonstrate to us. According to what I hear, they are going to have one opened by the end of this year.

The use of Federal funds does complicate the process considerably because of the law. It is not within the highway legislation.

Senator **Moynihan**. Will you ask Mr. Freidenrich if New Jersey will offer more dollars for business?

Mr. **Boehlert**. Yes, sir.

Mr. Freidenrich, to address one question just asked by the Senator, if they, New Jersey, will offer more dollars for business, we can certainly accept it. We can always use more dollars.

Mr. **Freidenrich.** We do, as do practically all the States in the country, have our own research division for research in various areas, areas which are of specific interest to New Jersey. In addition, we receive research planning funds through the Federal Government. We also participate in transportation research activities which do research, of course, in all areas of interest.

There is the National Cooperative Highway Research Program (NCHRP) which AASHTO is very active with, and we also receive benefits through technology, transfer of research, which the Federal Highway Administration does in its own research facility.

Mr. **Francois.** May I add to that? In recent times, the AASHTO research program has grown much more extensive on the bridge issue, after a workshop was brought together about a year and a half ago to design a new bridge research program. There is a considerable amount of research now going on.

The question of need is, of course, relative in many respects. We are looking at what is a $12 billion highway program over the next five years on the Federal system, but, of course, this is not as great a level of activity as was promised by the Act of 1982.

The numbers need to be weighted against what is the estimated need of some $50 billion of work on bridges. That $50 billion is probably high, because it does include some structural changes that may not be truly necessary. From a standpoint of bridges falling down, some repairs are not necessarily critical.

Nationwide, we are probably looking at the need of $30 to $40 billion in federal aid. The States are going to have to pick up what is left. We will keep the system operational, but make no mistake, we could use more money in every State nationwide.

Senator **Moynihan.** Mr. Francois and gentlemen, in 1984, we set up a commission on national reconstruction. We have the first of three reports.

We are investing about one-third less than we probably want to keep the structures at this level. It is a real problem. If we could get the Samuel Stratton Memorial Maintenance Program, it would help.

I think this particular event gives us a chance to ask AASHTO and ask the Federal Highway Administration in this next round, will you make a special effort? We need a category that is somewhat more than deficient. I know, that deficient frequently means you need to resurface. I think AASHTO is great, but you can get us a more informative category, don't you think? Deficient becomes dangerous.

Mr. **Freidenrich.** Mr. Chairman, perhaps it would be well to just elaborate on the inspection program a little bit. Let me assure you that every State in the country, when they perform their in-depth inspections under the national bridge inspection program, if they find a condition which even approaches the point where public safety would be jeopardized, that bridge will be taken out of service.

Now, the inspection program is a program which is a rating system. It rates, and it develops a sufficiency index which comes out of an equation which has perhaps a hundred different variables. If the number that pops out of there is above 80, that bridge is considered to be good.

Now, the sufficiency index also takes into account the functional obsolescence as well as structural deficiency. If the number comes out to be between 50 and 80, that makes that bridge eligible for rehabilitation funding under the Federal program, and if the number is below 50, that makes that bridge eligible for replacement funding under the Federal program.

During those inspections, you may find some deficiency which can be corrected rather quickly, and perhaps you take the bridge out of service for a couple of days, for a week, and you strengthen the bridge. Mr. Leathers referred to that briefly. The bridge is strengthened on an interim basis, and the bridge can be placed back in service.

If you find a bridge which has reached a point where it is starting to, say, approach a deteriorating state beyond the point of economic rehabilitation, it is then taken out of service until it can be replaced. That generally is a longer situation, because to develop new plans and get it under construction and get it replaced takes a longer period of time, but the conditions of the bridges are well known to the bridge engineers in the 50 States.

What we face here is a very, very unusual event, one that was totally unanticipated and, unfortunately, resulted in a catastrophic incident.

Senator MOYNIHAN. Thank you very much. We are going to be back with both of you.

I might make a point, not one bridge collapsed in the Schoharie but two several days apart.

Mr. FREIDENRICH. The second one, I understand, was closed.

Senator MOYNIHAN. By the time it fell down, but it could have well gone the same time the other one did.

Mr. FRANCOIS. Two more observations—I don't want to leave any misimpression about the nature of posting on bridges, the posting of bridge load maximum, which should not be violated by the general public. There is some indication, perhaps, that they don't mean anything, but they do.

Mr. BOEHLERT. How do you admonish people?

Mr. FRANCOIS. Well, one way is you make sure the public has no misconception, that they understand when a bridge is posted, that posting means exactly what it says.

Senator MOYNIHAN. Speed limit.

Mr. FRANCOIS. One other point, Mr. Chairman, I would like to comment on. I couldn't help observe the testimony by earlier witnesses, and I think it was extremely important—we are talking here about a bridge collapse of some $30 million in value as far as the bridge itself, but the economic impact of it is three to four times greater, and the public needs to better understand that.

The infrastructure is the basic underpinning of our nation's economy and way of life. If you take a piece of it away, you suddenly see how important it is.

Senator MOYNIHAN. Can I just ask, specifically, is it not the case that in terms of the estimate procedure, a $10 million cost in terms of the structure at different levels of surface and a good surface, we will say, economically works efficiently?

Mr. **Leathers**. We have them working in that area.

Senator **Moynihan**. Thank you very much. We now have your support.

My assistant has given us the following message. The mail will be delivered starting immediately. It will be a day late, because it must be delivered to the post office. No resident is to contact the post office.

Let's see, the message says they are to indicate if they want it delivered today late or will pick it up themselves—very active cooperation. They can contact Senator Farley's office and Assemblyman Tonko's office on messages regarding the mail.

Mr. Bigler, good morning to you and, Mayor Villa, good morning to you. Mr. Bigler, you are first.

STATEMENT OF CHARLES D. BIGLER, COUNTY ADMINISTRATOR, MONTGOMERY COUNTY, NY

Mr. **Bigler**. Senator Moynihan, Congressman Stratton, Congressman Boehlert, thank you for having me here. I am Charles Bigler, Montgomery County Administrator.

On Sunday morning, April 5, 1987, after two days of heavy rain, the Thruway bridge spanning the Schoharie Creek collapsed and, as far as we know, one truck and four cars took 10 people to their deaths.

Whatever the reason for the collapse, it will not be a good reason. We can blame it on the construction, on the creek, on the creek bed, on the topography, the soil, on the banks of the creek, on any number of things, but one thing we do know for sure. The Schoharie Creek has been swirling about, out of control, each spring as long as people can remember, and unless measures are taken to moderate the creek in time for future spring rains, disaster will strike again, lives will be lost, commerce disrupted, and people like ourselves will gather together and ask why.

This morning, however, it is not for me to speculate on why this occurred. That will be left to the experts, the engineers and technicians. I will touch on the human, social, and economic impact of how the flooding, collapse, and traffic patterns have affected and will continue to affect for some time our Montgomery County community and its people.

The first taste of the inconvenience that was to be experienced came early enough and quite simply. It was Tuesday, April 7, at 11:55 a.m., when Chairman James Ottati of the Board of Supervisors and myself crossed over the Fonda-Fultonville Bridge to have lunch at The Poplars, a restaurant about one mile from the county office building annex. We had no sooner arrived when we were informed the bridge had closed. Route 55 East was closed, and our alternative to getting back to my office was a 24 mile round trip down State Route 55 to Canajoharie, over that bridge, and east on State Route 5 to Fonda.

A simplistic example, perhaps, but if you were a resident of Fultonville, a trucker stopped at one of the two truck stops near the Thruway entrance, or a Fonda-Fultonville school bus driver, you knew right then and there that the impact of the events of the last few days were going to affect you and your pocketbook directly.

Earlier that morning, I had attended a meeting in the office of Superintendent Bill Higgins of the Fonda-Fultonville School District. Parents were concerned, children worried, and district officials puzzled over the safety of the Fonda-Fultonville Bridge and how kids were going to get picked up and delivered with the bridge closed.

It means lots of extra driving involved, lots more money involved, more travel over greater distances, and increasing concerns for safety. When will the bridge be opened, they asked. Will it be safe when it is? Will it support the buses? Will parents and children want us using it? How soon can we get our new bridge?

These kinds of meetings were being held all over the county. All of a sudden, traveling became inconvenient, more costly, and fraught with risk. Businesses, tourist attractions, retailers, city, county, town and village governments were being impacted financially by heavy rain, another fallen bridge, and, once again, the Schoharie Creek.

The creek is costly. I will attempt to give you some idea of just how costly by reviewing those costs, breaking them down into categories—tourism, business, sales tax revenues, roads/bridges and protective measures, hardship on residents, cost to the school district, and cost of replacement of collapsed bridges.

Tourism is one of our prime businesses. As of April 30, 1987, the Montgomery County Chamber of Commerce estimates tourism losses for this area at $66 million. These estimates result primarily from the loss of tourist and other traffic volume from both the eastern and western sections of New York State as a result of re-routing Thruway traffic away from exit 27 in Amsterdam and 28 in Fultonville.

The Montgomery County Planning Office surveyed 23 major businesses on April 10, April 13, and April 14. These businesses were categorized as either transportation service industry or trucking and transportation dependent.

Estimated total annual revenue loss, at that time, totalled $10 million. For example, Roadway Motor Plaza, $110,000 per week loss; Glen Travel Plaza, $75,000 per week loss; Buanno Transport, $7,000 per week loss; Beech-Nut Corporation, $4,000 per week loss; Coleco Industries, $3,000 per week loss.

Again, as a result of traffic re-routing and New York State Thruway exit closings, it is estimated that local motels are operating at only about 25 percent of average volume. Based upon approximately 1,000 area motel units, the Chamber estimates annual loss at $5 million.

Preliminary figures provided by the Montgomery County Treasurer's office project annual sales tax losses at $325,000.

The County Office of Emergency Management estimates as of April 30 that the county's impact in dollars due to bridge closings and/or postings of weight restrictions will be $2.3 million. The municipal impact approximates $500,000.

Currently, we have 10 bridge closings, 2 additional bridges with weight restriction and/or limitations which directly impact 8 farms creating access problems for 2,200 productive acres. The economic impact and hardship to these farms has yet to be ascertained.

While it is difficult to quantify the cost of hardship to residents in terms of dollars and cents, the psychological impact on the local populace cannot be denied or ignored.

For example, there is the additional expense of transportation due to bridges collapsing, closing, and the imposition of weight restrictions making it necessary to travel many extra miles out of one's way to get from point A to point B.

Then, there are the additional costs of transportation for the busing of schoolchildren due to rerouting, collapse, and weight limitations placed on roads and bridges, not to mention the fear response and stress of the parents of said schoolchildren.

And, of course, there will be the additional stresses of coping with increased traffic flows and patterns relative to extra time spent on highways, bridges, and roads which, heretofore, has never experienced congestion.

The costs associated with replacing the collapsed bridges is staggering. The New York State Department of Transportation and the New York State Thruway Authority have estimated the cost of replacing the I-90 bridge at $20 million.

The cost of replacing or repairing the partially collapsed Route 161 Mill Point Bridge is estimated to be in excess of $3 million, and the Montgomery County Department of Public Works estimated the cost to repair the Van Deusenville Road Bridge in the town of Canajoharie at $200,000.

The cost to the Fonda-Fultonville School District approximates $20,000 all for busing. You must realize, of course, that the schools were closed for three weeks, and had they been open, the costs would have been greater.

The district can only guesstimate the additional busing costs for the next school year, but assuming that nothing changes, those could reach or exceed $100,000. There is no guarantee the State will pick up the extra costs, although legislation has been introduced in the State legislature to have the State do that.

As the county budget officer, I have to be concerned with the impact on our 1988 budget. You have already heard me say that sales tax revenues could be down $325,000. This, coupled with the elimination of Federal revenue sharing and the county's costs associated with the recent disaster, will have a devastating impact on that budget.

Even with Federal and State disaster assistance, the county's obligation will be 12.5 percent of the damage costs. This could and probably will mean a tax increase or bonding. Neither alternative will be a palatable one to pursue.

Mr. Chairman, I would hope that you and your committee would look very carefully at our needs. I would hope that this hearing would result in some concrete action by the Federal Government to bring much needed assistance to our small rural county.

I would hope, too, that the Federal Government will make a serious and concerted effort to improve, repair, and replace, where needed, those areas of this county's infrastructure that require it. Our society demands this be done so that lives aren't lost and our families, friends, and neighbors can travel without fear and trepidation.

Mr. Chairman, I want to thank you for the opportunity you afforded me to bring my views to the attention of this committee. I look forward to seeing positive results come from this, and we stand ready to assist with additional data as it becomes available.

Again, thank you.

Senator MOYNIHAN. Thank you, Mr. Bigler.

And now I interrupt this hearing to bring you another postal bulletin from Representative Boehlert. Mr. Boehlert?

Mr. BOEHLERT. I have a message here that mail will be taken out today and delivered by special postman to the residents of Hughes Road, and they will have regular delivery starting tomorrow.

Senator MOYNIHAN. Thank you, Mr. Boehlert.

Mr. STRATTON. Mr. Bigler, is it likely there will be some increase of curiosity seekers wanting to take a look at the bridge and see what happened? Hasn't that accounted for some additional business—although you indicate a loss of normal business has been pretty catastrophic.

Mr. BIGLER. Congressman Stratton, I think that, of course, will have to be measured over the long haul. I am sure Sheriff Emery does find weekends increased around the areas of the collapsed bridge site, Fort Hunter specifically—people who are going out of their way, who don't normally travel that area, who may be spending some dollars in our county, perhaps overall curiosity of the collapse. If repairs and replacement are not done, it will indeed have a detrimental impact.

Senator MOYNIHAN. On the whole, they will be coming through apple blossoms.

Mr. BIGLER. Yes.

Senator MOYNIHAN. Mr. Mayor, would you like to proceed?

STATEMENT OF HON. MARIO M. VILLA, MAYOR, CITY OF AMSTERDAM

Mr. VILLA. Thank you, Senator Moynihan. I want to thank you for allowing me to appear before the committee.

I would like to make mention that Mr. Bigler's statement incorporates what has happened in the city of Amsterdam.

I would like to ask you, Senator, if there is anything you and Congressman Stratton and Congressman Boehlert can do to speed up the process whereby Montgomery County would be declared a disaster area so it will be eligible for Federal assistance, because one thing, there are several things we have experienced and that is the damage that has been done which threatens dozens of homes and industry on Brookside Avenue where there is a creek, and there are no monies in our project. It is Dove Creek which flows along Brookside Avenue, and unless an emergency is declared, I don't see how this can be done if there are other storms such as we had this last spring.

In Amsterdam, one of several other things Mr. Bigler had mentioned was the impact it made on our city when the bridge collapsed and the traffic being rerouted cost the city of Amsterdam a considerable sum of money and caused considerable damage in the neighborhood of approximately $50,000 to our facilities—of course, the recreational parks and golf courses in the city, and so forth.

We have budgeted in the 1987-1988 fiscal year sums of money to keep Route 5 free of snow. We don't have to remove the snow, but because of the increased traffic which we are going to be handling, despite the way the traffic is being re-routed, we are still getting, according to our chief, roughly 15 to 20 percent more traffic than we normally have been getting. As a result of this, the monies in our program for the 1987-1988 fiscal year—we have to have sufficient sums so we can keep the streets, Route 5, free of snow.

We are going to have to physically remove that snow and, in addition, we have to repave a section of Route 5 which we don't have any funds for.

So, I would ask you, Senator, and your colleagues, Congressman Boehlert and Congressman Stratton, to do whatever you can to designate this a disaster area, that a disaster area be applied to the City of Amsterdam and Montgomery County so we can receive some assistance both from the Federal Government and from the State of New York.

Senator MOYNIHAN. A perfectly fair request; you have to repave Route 5.

Mr. VILLA. Portions of Route 5 are required. We need some repaving and we will have to put up guard rails just to make that area safer than it is right now to handle the increased traffic.

Senator MOYNIHAN. There are 10 bridges in the county that are down?

Mr. BIGLER. 2 down and 10 either closed or posted as to weight.

Senator MOYNIHAN. As a consequence of this?

Mr. BIGLER. Yes.

Mr. VILLA. We have 2 bridges in the City of Amsterdam that are closed. 2 of the city's 17 bridges have been closed for safety.

Senator MOYNIHAN. How many bridges do you have?

Mr. VILLA. We have 17 in the City of Amsterdam.

Mr. STRATTON. Mr. Mayor, my understanding is that in order to get an area declared a disaster area, the request for that has to come through the Governor, and it is my understanding the Governor has already made that request to Washington. I don't know whether you can get a second shot.

Mr. VILLA. I don't understand how it works, Congressman. It is my understanding it is now up to the President of the United States.

Senator MOYNIHAN. We don't have the answer.

Mr. BOEHLERT. Let me point out I want to thank the Montgomery County Administrator for his statement, because it is very specific. That is very helpful to us. We don't speak in generalities.

I want to thank him for telling us the real problems you are facing. I also want to commend your staff and your working with us to get the information necessary to get the disaster area declaration. We will keep you posted on that.

A lot of problems have been created in the County of Montgomery, and because this happened to a bridge over which you have no jurisdiction, no control, next year you are going to be faced with two problems—eliminating a section of services or increased taxes. I don't want you to be faced with either one of those.

You have a real problem in the Sheriff's Department, Mr. Bigler. Could you tell us a little bit about the diversion of traffic?

Mr. **Bigler**. By diverting traffic and posting deputies at various bridges that are closed—this is taking place over a great deal of time, an excess of time.

Mr. **Boehlert**. Traffic control.

Mr. **Bigler**. Yes. All those things are problems. All those factors add up to dollars and cents.

Senator **Moynihan**. Gentlemen, we thank you very much, Mr. Bigler and Mayor Villa. Thank you for carefully eliciting the facts and your accounting. It is important to us. We appreciate it.

Mr. **Villa**. Thank you.

Senator **Moynihan**. Now, then, we are going to have our concluding panel. I know that my colleague, Mr. Boehlert, has to leave at a certain point. I would like to go on with this.

Good morning. We have a distinguished panel here to conclude our hearing today. We have Franklin White who is Commissioner of the New York State Department of Transportation; Dr. David Axelrod who is our distinguished Commissioner of the New York State Department of Health; Henry Bersani, Chairman of the New York State Thruway Authority; and, finally, Mr. Alexander Levine who is Executive Director of the New York State Thruway Authority.

Gentlemen, we welcome you, Commissioner, you are accompanied by an associate.

Mr. **White**. Senator, let me introduce this gentleman who is Executive Deputy Commissioner of the Department of Transportation and who has been coordinating all our activities.

Senator **Moynihan**. Good morning, sir. We welcome you to this hearing.

Mr. Commissioner, why don't you begin.

Dr. **Axelrod**. Well, Senator, I am going to go first.

Senator **Moynihan**. All right, Dr. Axelrod. You will lead off.

Dr. **Axelrod**. Thank you, Senator.

STATEMENT OF DR. DAVID AXELROD, COMMISSIONER, NEW YORK STATE DEPARTMENT OF HEALTH

Dr. **Axelrod**. Mr. Chairman, Congressman Boehlert, and Congressman Stratton, we are very indebted to you for providing the State of New York the opportunity to discuss the impact of one of the most tragic transportation accidents in the modern era in New York State.

My name is David Axelrod. I am Commissioner of Health and Chairman of the Disaster Preparedness Commission which is responsible for coordinating the State response to emergencies, both natural and man made.

I say this was one of the most tragic modern transportation accidents in part because of its entirely unanticipated nature. Ten lives were lost off a bridge that was, by every available measure, thought to be perfectly safe. Safety is something I would have something more to say about. It is something we all anticipate, and we should all respect. Perhaps the unanticipated event tells us something about what safety really means.

There was absolutely no warning sign that anyone could detect. And, yet, an apparently safe bridge on one of the safest road systems in the world suddenly collapsed under the pressure of a raging river.

The prime issue, over the long term, is how to prevent such a disaster from happening again. Specifically, are there technical measures available to us which would enable government to develop an extra measure of protection and assurance? Are there better detection systems we should use or that we should develop as a result of this accident?

I know that the Senate subcommittee must share this same concern.

The Governor's immediate concern was for rescue efforts for public safety, the vulnerability of additional structures, and the initiation of monitoring at all potentially defective structures.

On April 5, Governor Cuomo ordered an immediate check of all bridges over water which might be threatened by the heavy flooding in eastern New York. The Transportation Department inspected 356 bridges in the 14 affected counties. Six were closed, all on local roads in or near the Catskills, the region hardest hit by the severe weather. The Thruway Authority checked another 167 bridges which cross water statewide and found none to be at high risk.

The Governor arrived at the scene within a matter of hours, and his directions to me were to address the issues of public safety and rescue efforts.

The issue of long-term as opposed to short-term is now to prevent such disasters from happening again. Specifically, what technical measures are available to us which will enable government to develop an extra measure of protection and assurance? Are there better detection systems which we can use or that can be developed as a result of action for analysis which can provide insight? This concerns highways not only in New York State but the entire United States.

As I say, I know that the members of the Senate subcommittee and Congress personally share the same concerns.

Let me first review some of the shorter-term measures the State has taken to cope with the tragedy.

As I said, on April 5, Governor Cuomo ordered an immediate check of all bridges over water which might be threatened by the heavy flooding in eastern New York. The Transportation Department inspected 356 bridges in the 14 affected counties. Six were closed, all on local roads in or near the Catskills, the region hardest hit by the severe weather. The Thruway Authority checked another 167 bridges which cross water statewide and found none to be at high risk.

The State Route 161 bridge which collapsed a week after the Thruway tragedy had no one on it because it was closed prior to April 5 because of threatening water in the Schoharie.

The Governor and Thruway Authority immediately sought independent engineering assistance to conduct the State's investigation into the collapse and to assist in designing temporary and permanent replacements. The capability of the Transportation and

Thruway staffs is not at issue, but public confidence demands an independent review by the best engineering minds available.

So, even before the National Transportation Safety Board entered the investigation, the Thruway Authority had engaged the internationally known firms of Wiss, Janney, Elstner Associates of Chicago and Mueser-Rutlege of New York to begin the State's probe. Subsequently, the firm of Thornton-Tomasetti of New York was engaged to provide general oversight for the investigation, reporting directly to me at the Disaster Preparedness Commission.

I can assure you that all State personnel and consultants are sharing every piece of available information with the National Transportation Safety Board investigators and will cooperate to the fullest with that probe.

We also will look to the Corps of Engineers for their support in providing for remodeling of the Schoharie Basin, remodeling after the Pittsburgh area. We certainly ask for their support to assist us in assuring that kind of remodeling can take place to provide for assaying vulnerability of the structure on the Schoharie Creek.

Aside from the families of the 10 victims, the collapse has fallen most heavily on the citizens of Montgomery County and particularly those in the Fort Hunter area. These people are confronted by the sudden rerouting of a super highway's traffic past their front doors, and disruption is probably a rather gentle word for this experience which affects everything from school buses to milk trucks, from ambulance service to the Auriesville Shrine.

At the State level, we are doing everything we can to ease this burden on the local community. Most important, we are pressing to get a detour in place quickly to relieve the local roads of the Thruway traffic. Since that detour will involve the use of the Route 5–S bridge over the Schoharie, the Department of Transportation is committed to reopening the Route 161 bridge a few miles to the south before the detour is set in place.

Other efforts involve assistance to the local volunteer fire company, to local farmers, to the EMS squad, to the County Sheriff, and to the County Emergency Management Office.

County Sheriff, Ronald Emery, who received three surplus cars from the Thruway for $1 has been very helpful in identifying safety and logistical concerns. State police and transportation officials are continually working with the Sheriff to minimize safety problems in the county.

All local officials have been extraordinarily cooperative and understanding in this emergency. In addition to Sheriff Emery, we have enjoyed the assistance of County Administrator Charles Bigler, Emergency Management Director Roberta Fox, and County Board of Supervisors Chairman James Ottati, to name a representative few.

Governor Cuomo has asked President Reagan to declare the Montgomery County area eligible for Federal disaster relief, and I am sure you gentlemen are as anxious as we are to see that the request be granted. Federal and State assessment teams are still in the process of evaluating the damages, so we cannot exactly quantify the total damages, but we have made some preliminary estimates which have been forwarded to the Federal Government. Of course, these losses relate not just to the Thruway bridge collapse but to the flooding that caused evacuations and washouts up and down the Schoharie.

The economic ripple effect of the Thruway bridge collapse reminds everyone of why the Erie Canal was so important to the young Nation when it was constructed in the early 1800s. The Thruway which runs alongside the old canal represents a vital commercial link for this part of the country. The impact of this collapse is felt not just locally, not just in New York, but all around the region.

To demonstrate the importance of the region, let me point out that 11 of the Nation's top 12 trucking firms have depots in the Syracuse area.

A survey conducted by the State Motor Truck Association indicated that freight costs across upstate New York were up by half a million dollars per week as a result of the Thruway being severed. The inability to run tandem trailers on the detour roads is a major cost factor. That is a cost factor which will appear in the household budgets of the entire Northeast eventually. We re told that some carriers have already filed for rate adjustments to compensate.

The tourism industry is also seriously concerned about the collapse, and so are we.

The State Commerce Department has estimated that if no detour is put in place, the State's economy stands to lose some $102 million in tourist income. July and August are the heaviest tourist traffic months on the Thruway, so that is where the biggest losses will come if we are not able to both repair the road and repair public confidence at the same time.

A special effort is being undertaken with the Commerce Department to reach out to the travel agents and tour group organizers and to explain that safe, efficient travel across upstate New York is indeed possible this summer. The regularly scheduled summer season "I Love New York" promotion campaign began soon after the bridge collapse, and we will make every effort to back up that campaign with solid assurances about upstate travel.

Montgomery County is not only an important transit region for the southern Adirondacks, it has attractions of its own. One of the most important is the Auriesville Shrine just west of the collapse site. Along with the Sheriff, we are working to identify the tour bus operators who bring groups to the shrine and advise them of efficient alternate routes.

As other specific problems are identified, we will tackle them in concert with local officials.

Though the investigations into the collapse have not yet reached the stage where any conclusion can be stated, I think it is important to devote a few words to the overall issue of preparedness.

Our Nation has gradually devoted more attention and funding to emergency preparedness in certain specific settings such as nuclear powerplants, but we don't seem to be translating the lessons learned there into the broader framework to embrace natural forces with the potential to overpower us by tearing down bridges and uprooting whole power line networks.

These are just the two most recent disasters with which I am familiar with here in New York State.

My point is that we need to be better coordinated and better prepared. We need to build systems that alert us.

There has been discussions with consultants, to some extent, the problems that afflict a whole network of roads and bridges in the United States. There is a problem with respect to the definition of bridge inspection procedures, how adequate it is, how good can it become, what level of safety can it assure.

Our concern is, however good the bridge inspection program is, we in New York State have one of the best bridge inspection programs in the country, and, yet, this occurred. Have we made use of some of the technology? Have we made use of some of the radar? How long can we wait? We can't wait long. All of our structures are at risk.

We have the responsibility to assure that appropriate changes are made to bring in focus the technology that is available. We also have to look at mechanisms to provide for installation of monitoring for catastrophic failure. We must look at designs that will provide for warnings that will prevent the kinds of disturbances that happened. We also have to look for monitoring under non-catastrophic conditions. We have to assure ourselves that periodic monitoring will provide us with the kind of assurance that our roads and bridges and all of those elements that are part of our roadway system will perform without fail.

Whether it is additional redundancy, with respect to construction, whether it is vulnerability analysis that needs to take place, or whether its monitoring, clearly we have something to learn from this experience.

To the natural hazards that continue to challenge the ability to deal with the kinds of inspection procedures that can be put in place, there is no magic solution. There is no simple answer to all of the problems, and, certainly, we hope we will know more as a result of forensic analysis.

I think it is important to recognize that a unit of the National Research Council, the National Institute of Engineering, has already identified some of the problems we need to address. If I could quote from a report:

> There is a recognition of the problems associated with premature crumbling of concrete. The report identifies premature crumbling as jeopardizing buildings, highways, and other structures in the nation's, $6 trillion concrete infrastructure. The cost of repairing and replacing existing concrete structures is estimated at several billion dollars. An epidemic of bridge deck deterioration also plagues the nation's bridges. Bridge decks are especially vulnerable to steel corrosion which in turn is tied directly to the quality of concrete used in the construction.

If the concrete is cracked or porous, salt and other deicing materials will seep through the concrete and start rusting the steel. The reaction from the rusting causes the concrete to buckle.

Transportation experts estimate not 130,000, but some 250,000 bridges currently show damages from lack of durability, and 3,500 more are added to the list each year. The money for replacing bridges damages would reach nearly $50 billion, it was noted.

My point, gentlemen, is that we have had a major tragedy. That tragedy needs to be prevented from happening again. We need to recognize the deficiencies. We need to put in place a better warning system. We need to know of the vulnerability that exists in existing structures. We need to assure ourselves we are providing that level of safety that the public has every right to command.

Senator **Moynihan**. Thank you, doctor. May I say I am aware of that study.

Dr. **Axelrod**. Yes, from the National Institute of Engineering.

Senator **Moynihan**. I know we are in the high school auditorium, and I see some students in the back. Does anybody any longer read the "Bridge of San Luis Rey?"

[No response.]

Sam Stratton and I are the only ones. It is a bridge that crossed a lake in Chile in the 17th century, and the passengers that were walking across it fell.

One of the questions we are going to have to ask ourselves, Dr. Axelrod, if I am not rather open about this, is whether the kinds of foresight that you feel are urgently needed can be carried out so long as the Thruway organization is not responsible to anyone but themselves and the bond holders.

Dr. **Axelrod**. Now, I would like to read the remaining portion of my statement.

On the first weekend in April of 1987, the New York Power Authority was aware that a very large volume of water was moving down the Schoharie from its dam. The local Sheriff was notified, but how far did that word spread? And was it coordinated with warnings from the National Weather Service which also saw a heavy flood potential?

The Thruway Authority never got the high water warning from the Gilboa Dam, and it used a different weather service which wasn't so alarmed about the potential problems. We don't know that this made any difference on the fateful weekend, but it shows a lack of coordination, and it shows the need for better analysis and communication.

We in the government must recover from this Schoharie Creek disaster with a program to resist its recurrence. We need to carefully evaluate our ability to, one, identify potential problem areas or weaknesses; two, integrate that knowledge into an overall vulnerability analysis; and, three, assure that communication systems exist to transmit this new found date to those who need it in an emergency.

This is not a magic solution. We know of no single, easy to fix flaw in the Schoharie Creek bridge to give us comfort. We must learn to protect ourselves more effectively against such totally inconceivable tragedies.

In that effort, we look for assistance far beyond New York's borders, and any help you can provide will be greatly appreciated.

Thank you.

Senator **Moynihan**. Let us go with Mr. White.

STATEMENT OF FRANKLIN E. WHITE, COMMISSIONER, NEW YORK STATE DEPARTMENT OF TRANSPORTATION

Mr. **White**. Thank you, Senator.

In light of Dr. Axelrod's rather complete remarks, I will only touch on some of the critical points in my statement. I know you and the other Members have already read it.

First of all, I would like to express DOT's appreciation to the communities involved and to the local legislators for their patience and understanding of a rather difficult time. We all work to try and take care of all the complaints and inconvenience that has occurred.

With respect to bridge conditions, I think all of us recognize that as our Nation's infrastructure decays, it has become clear that bridges are of special concern.

There are roughly 17,000 bridges in the State. The number of State owned bridges is roughly 7,500, and there are about 9,000 local bridges, and there are a number of private railroad bridges. Of these State owned bridges, some 36 percent are rated as deficient. Of the local bridges, 54 percent are deficient. As you pointed out earlier, deficient does not mean unsafe, and we need to have a more precise characterization of bridge conditions.

In New York, we use a scale which is 1 to 7, with 7 being a brand new bridge, 5 would be a bridge which had minor deterioration, and 3 to 0 would be potentially hazardous. As you will hear, this particular bridge was rated at 5.

We are proud of the inspection procedures that we have in New York. They are much more detailed than Federal procedures require.

All of you, I believe, are familiar with this book. We think that there are few States among the 50 States with as detailed a set of instructions for bridge inspection as we have in New York State.

With respect to present and future needs, I think it is true to say that in New York, because of the fiscal crisis we experienced in the late 1970s, we were not able to put into infrastructure maintenance and bridges all that was required. The Governor recognized that when he took office in January of 1983.

We got a bond issue in November of 1983 which we have put to use restoring our infrastructure. Just briefly, in the years since the bond issue, the percentage of pavement deterioration has declined 40 percent in New York State to 11.

With respect to the bridges, before the bond issue, there was about a 9 percent increase in the number of bridges in the number 5 category.

Mr. STRATTON. 9 percent?

Mr. WHITE. Yes, rated 5 or less. We have now about stabilized that number. What we have been doing in recent months is calculating what it will cost into the 1990s to maintain and improve the condition of the bridges. The numbers are very large.

With respect to State bridges, we concluded that it will cost an additional $180 million per year just to maintain the bridges in the condition that they were in in 1985. With respect to local bridges, it will cost about $60 million annually to maintain local bridges in the shape they are now. So, the numbers are, as I said, astronomical.

Senator, I know you are very familiar with all those numbers. The Federal bill which was adjusted has an overall authorization of roughly 10 percent below the prior year. With respect to bridges, the number is $1.6 billion which is authorized on a counter bill. The previous bill had $1.9 which was authorized. So, the reduction which is the largest, I should add, is in the area of bridges. It is about 15 percent down.

We have at the State level been focusing on just what I said: what it will cost to maintain the infrastructure into the 1990s, and that is to be presented to Governor Cuomo; a recommendation for the assistance of a program through 1995 and recommendation of potential sources of revenue which the State ought to consider to raise these funds.

While States around the country are facing the same growing need for maintenance funds, the new Federal Highway Act has cut Federal aid significantly.

I will conclude on the matter of emergency assistance that we need. As you know, the Thruway Bridge will require special legislation in order to become eligible for Federal assistance for its reconstruction. We are going to be arguing a little bit about that, but we have, Senator, recently sent to you our understanding of where that is with the request that special legislation be submitted.

I would like this statement included.

Senator MOYNIHAN. Yes, certainly.

Thank you.

Mr. Bersani, Chairman of the Thruway Authority, I would like to hear from you next, and I guess we would like to hear, if you can tell us, what happened.

There is a specific time and place and a normally placid stream called a creek, Schoharie Creek, which found itself in a volume of water equal to the levels of the flow of Niagara Falls, and no one in the Thruway Authority seems to have——

Mr. BERSANI. As a matter of fact, there is an early warning system. There is an early warning system that does notify DEC, but the Thruway Authority is not notified.

Senator MOYNIHAN. Stop right there. There is an early warning system that tells the Department of Environmental Conservation?

Mr. BERSANI. Yes.

Senator MOYNIHAN. Of high waters and——

Mr. BERSANI. Dam upstream.

Senator MOYNIHAN. Thruway Authority is not told?

Mr. BERSANI. Yes.

Senator MOYNIHAN. Why?

Mr. BERSANI. I don't know.

Senator MOYNIHAN. Have you thought about it?

Mr. BERSANI. That is one of the things——

Senator MOYNIHAN. I don't want to interrupt you. It is a very important point.

Mr. BERSANI. Would you like to hear my statement now?

Senator MOYNIHAN. Yes, sir.

Mr. BERSANI. Thank you.

STATEMENT OF HENRY A. BERSANI, CHAIRMAN, NEW YORK STATE THRUWAY AUTHORITY

Mr. BERSANI. Good morning.

My name is Henry A. Bersani, and I am Chairman of the New York State Thruway Authority. With me is Alexander A. Levine, Executive Director of the Authority.

We appreciate the opportunity to appear here today to discuss the April 5 Schoharie Creek bridge collapse.

First, let me say on behalf of all employees at the Authority that we have been deeply affected by this tragedy.

Senator MOYNIHAN. Mr. Bersani, do you have a copy of that statement?

Mr. BERSANI. Yes.

Senator MOYNIHAN. All right, sir.

Mr. BERSANI. Never in the 33-year history of this road has anything remotely like this happened. As you know, Senator, the Thruway that came into being as you were joining Governor Harriman's administration has long prided itself as having one of the outstanding highway safety records in the country.

By the way, Senator, imagine if we had not caused Harriman to be a one-term Governor, how different the Authority might have been.

In 1986, the Thruway's fatality rate was 0.89 per 100 million miles traveled, well below the national average of 2.1 fatalities per 100 million miles.

Mr. BOEHLERT. Will you kindly repeat that?

Senator MOYNIHAN. Yes, that was a little too fast for Mr. Boehlert. You are going to have to explain.

Mr. BERSANI. This is a field hearing on bridges. It should have been subtitled "Thruway Authority Bashing."

We were talking earlier about the Thruway Authority and you were talking about joining the Harriman administration and Bidell Bixby and you and I worked on both Harriman campaigns. If we had not made Governor Harriman a one-time Governor, we might not have an Authority problem at this time.

Senator MOYNIHAN. Why don't you continue with your statement.

Mr. BERSANI. In 1986, the Thruway's fatality rate was 0.89 per 100 million miles traveled, well below the national average of 2.1 fatalities per 100 million miles.

But that record is no solace now as we strive to cope with the events of April 5.

As Dr. Axelrod has indicated, we have a series of investigations now underway. I believe the record is clear that we will spare no expense, accept no half-way efforts, and make all information available to the public. We have hired the absolute best independent engineers we could find, and we want the answers more than anyone, for what must emerge from this tragedy is a more effective safety program on the part of the Thruway and other responsible agencies.

At this point, the investigations are in the preliminary stage. We would do a disservice to those investigators, our own, and those working with us from the National Transportation Safety Board if we speculated at this point on the precise cause of the bridge collapse.

We all know that a near-record flood roared down the Schoharie Valley that Sunday, but exactly how and why it destroyed the Thruway Bridge is not known. We are searching in every possible direction for the answers.

Was it a design problem? Did the Thruway's maintenance and inspection system somehow fail us? Was the original construction faulty?

Let me offer you a brief history of this structure and then review some of the efforts the Thruway is putting into safety.

The Schoharie Creek Bridge was built under a contract let in February of 1953. It was opened to traffic on October 26, 1954 by Governor Dewey. He led a motorcade on that date from Newburgh to Westmoreland, near Utica, opening a section of Thruway that linked Buffalo with the lower Hudson Valley, a distance of more than 300 miles.

We don't yet know everything there is to know about that construction project, but we know there was pressure to finish on time. Records indicate that some problems were recognized even before the construction contract was finalized. A repair contract was let less than 2 years after the ribbon cutting for work on the deck and some of the supporting structures.

Was this a fatal weakness? We don't know yet.

An October hurricane in 1955 produced an even greater flood in the Schoharie Creek than did the flood of 1987, and the bridge survived.

The history of the bridge after that time was not unique. Inspection records indicate the usual pattern of maintenance needs. A rehabilitation effort originally planned for the mid to late 1970s was delayed until the early 1980s because of budget cutbacks related to the gas shortage. The work was then done, however, in 1981 and 1982, including repairs to the deck and superstructure.

In recent years, the Thruway Authority has recognized an increasing need to commit more funds to maintenance and rehabilitation efforts. The roadway which was a national prototype in 1954 is growing old, and it carried a much greater traffic load than its designers ever envisioned.

We have submitted detailed materials to your staff, but I should take a moment to outline some of the figures that show an increasing effort to repair the road and maintain it in a safe condition.

In 1983, the Thruway spent $89 million on maintenance and rehabilitation overall. Just 3 years later, we spent $166 million in the same category, an increase of 84 percent. For 1987, we budgeted $250 million.

Turning to bridge work alone, the figures reflect similar increase. In 1983, the Thruway spent $22 million in this area, and in 1986, $46 million, representing a 114 percent increase. For 1987, the bridge budget is $74 million.

We have also begun to take a new approach to bridge inspections, recognizing that we cannot, by ourselves, keep pace with the advancing engineering technology in this area. Along with the Department of Transportation, the Thruway is hiring specialized consultants to undertake periodic underwater inspections of important bridges crossing water. Thruway engineers had recommended the Schoharie Creek Bridge for inclusion in this special underwater inspection program, and it would have been one of the first Thruway structures inspected.

As Commissioner White can tell you in more detail, the State is moving to an underwater inspection program in advance of a Federal requirement which is just now being proposed.

The Thruway Authority is also moving to a greater use of consultant engineers to carry out inspections within the 2-year time frame required by Federal and State standards. This decision is dictated by the need to make greater use of technical advances and equipment not always possessed by the Authority.

This consultant capability is meant to augment the highly qualified professional Thruway Authority staff, not to replace it. The staff is selected through the Civil Service System and is extraordinarily committed to the Thruway, but they are now having difficulty keeping up with the 2-year inspection schedule for the 325 Thruway bridges we inspect.

Another 535 bridges which carry State and local roads over the Thruway are inspected by the Department of Transportation and consultants.

Thruway inspections are carried out in accord with Federal and State DOT requirements, using the State manual. Our inspectors participate in the DOT training course, but as I have indicated, we think we can do more, and we are planning to do so. Needless to say, any lessons learned from the Schoharie Creek tragedy will be incorporated into our overall safety program.

Ever since the bridge collapse, the Authority engineers have worked on an emergency schedule with other State agencies and outside engineering firms to design both a safer detour and a replacement bridge with one prime goal in mind—to assure the safety of the local communities impacted by the collapse and the traveling public.

We let contracts last week for a detour route that we aim to have in place before the 4th of July weekend. It will utilize two existing bridges across the Schoharie Creek and represent the fastest way to get Thruway traffic off local roads carrying farm machinery, milk trucks, and school buses past the front doors of Montgomery County.

We know this represents some inconvenience for the Fort Hunter community, but it will provide greater safety during the time before we can get a replacement bridge built. Less important to us now but important to the economy of the State, this will also knit the Thruway back together and repair that severed link across the northeastern section of our country.

As for the Thruway directly, we saw a 14 percent decline in commercial revenue during the first 17 days after the accident. This contributes to an overall reduction of $314,000 dollars as against the revenue for a comparable period in 1986. Passenger revenue was actually up slightly when compared with a similar period. This is related to the overall revenue increases on the Thruway which were running 8 to 9 percent above last year's figures before the collapse.

When it comes to construction of a new bridge over the Schoharie, we will be taking every step to assure ourselves and the traveling public that the new structure will withstand the forces of that location. The engineering firms we have engaged to analyze the collapse and design a new structure have together identified possible contributing factors to the tragedy, and we are designing the new bridge to guard against every one of them.

We are adding redundant steel beams; we are using pilings under the piers, something the other design did not have; we are widening the stream channel which will reduce the force; and we hope to have at least one deck of the new bridge in service during the middle of next winter, although, if we have to slow down to accommodate additional safety concerns identified during our investigation, we will.

In closing, let me say that the Authority takes very seriously its responsibility to the citizens of New York State to provide safe, efficient transportation through one of the most heavily populated sections of our nation. When the bonds are paid off and the road is turned back to the State a decade from now, we are determined to turn over a system that is a national model for safety.

Thank you. Mr. Levine and I will be happy to answer your questions.

Senator MOYNIHAN. Thank you, Mr. Chairman.

This is a very open statement that you made—openness with respect to a very serious proposition. You note that the bridge was opened in connection with a great tour which then-Governor Dewey took on October 26, 1954 through the Hudson Valley and across to Utica, and you say that we know there was pressure to finish on time.

Now time, sir, as you well remember and I won't forget, time was the gubernatorial election of that year. The tour took place about 10 days before the election which was a very narrow election, less than 10,000 votes. Is it possible that an unsafe bridge was built in order to win votes in the gubernatorial election?

Mr. BERSANI. Having participated in campaign activities, if somebody told me that is what they did, I wouldn't be surprised. I don't know if that is what they did or not, but if somebody told me they did that, I wouldn't be surprised.

Senator MOYNIHAN. That is a very large statement, sir, a very candid one.

Thank you, gentlemen.

Now, first Congressman Stratton, dean of our delegation.

Mr. STRATTON. As dean, that means I am the oldest member on this committee. I can recall when I was Mayor of Schenectady, and I can remember carrying one of my sons to watch the parade that Governor Dewey had coming through. He stopped at the Schenectady interchange and praised his administration, and I think he may have had a kind word for the gentleman that was running against Governor Harriman, but I remember following that parade.

I noticed that on many of the turns and some of the areas where there were drop-offs from the Thruway itself that there were no guard rails, and I remember pointing that out to our mutual friend, Jack Bingham, who was the Governor's secretary and pointed out that this looked to me as though there had been a disregard of safety on that.

Senator MOYNIHAN. There was pressure to finish on time?

Mr. STRATTON. At that point, I did not know why, but I knew that what they were doing was opening a road that had a potential hazard. I don't know that anybody fell off the higher elevations, but it was obvious that not everything had been taken care of.

Dr. AXELROD. That is clearly identified in photographs that we were able to obtain, Mr. Stratton. We have, in fact, identified the same concern, because the photos show the Governor traveling across the bridge with the absence of guard rails is correctly identified.

Senator MOYNIHAN. We may be hearing something awful. This was a political enterprise in the sense that a great road was built, but they rushed to get it open in time for an election.

Mr. BOEHLERT. Commissioner Axelrod, you indicated that immediately after the tragedy, there was an inspection of some 167 bridges. Is that what you said?

Dr. AXELROD. Yes sir.

Mr. BOEHLERT. I don't have the benefit of a copy of your testimony, but my notes indicate that you further reported to us that none were found to be at high risk.

Dr. AXELROD. None of the Thruway bridges. One bridge which was identified as being similar in structure to the bridge over the Schoharie was at Kingston, and a great deal of effort was made in the evaluation of that bridge and nothing was found to be wrong. But all bridges on the Thruway at that point were evaluated.

Mr. BOEHLERT. Let me ask you this. Had you used the same criteria and had you inspected the bridge in question the day before the tragedy, would you have concluded that it was not at high risk?

Dr. AXELROD. That was precisely the point I was making. Had it been inspected using the available techniques without some new technologies, my expectation is the bridge would have been found to be a sound bridge and that decision would have governed the activities of the Thruway Authority. I think that is the unfortunate tale of having the very best bridge inspection program in the country as defined by our Federal standards, and, on the other hand, not being adequate enough to identify a potential catastrophe.

One of the things that I would hope would come out of this is that the National Academy of Engineering would be asked to reevaluate the Federal standards for bridge inspections and to ensure that some of the elements of technology that are currently available are made part of a mandated program for bridge inspection.

The Senator also previously made mention with respect to the responsiveness of the Thruway Authority to the additional constraints that might be placed upon the bridge inspection program as to their responsiveness to what might otherwise be mandated. I think there is a potential problem that probably needs to be met by requiring recertification by the reporting State agency. In this case the Department of Transportation.

As you have already heard from our Federal colleagues, the Department of Transportation is the State agency responsible for reporting, only reporting, the inspection of bridges that exist throughout the State of New York. It is not responsible for certifying to any extent the safety of those bridges. Except for reporting the information, there is no certifying agency that is required by the Federal Government for safety of bridges. All that is required is reports be submitted.

As someone familiar with the Medicaid system responsible for surveillance and certification, I have the responsibility of certifying, based upon our surveillance, to the Federal Government the accuracy of various facilities that are operated by other State agencies. I think in this case, there should be a single State agency responsible for certifying to the Federal Government the safety of those structures as they had been identified.

Mr. **Boehlert**. Should we demand more of the State.

Dr. **Axelrod**. Absolutely. I think there should be a greater responsibility thrust upon the State at the same time as there is recognition that their needs for accompanying additional funding will result in effective responses.

You will always hear that resources are going to determine the effectiveness of certification program. I think the Federal Government's responsibilities extend to the designation of a certifying agency and to provide resources that will provide for assurances that I think the public has a right to demand with respect to bridges and other structures that are the main routes of transportation in this country.

Mr. **Boehlert**. Mr. Bersani, let me ask you, you gave us some pretty impressive figures in terms of the Thruway Authority's increasing investment in their repair and bridge work. How about your revenues? Are they going up?

Mr. **Bersani**. Revenues have gone up constantly in the last 6 or 7 years. Just recently we reported $220 million, up from $207 million the year before. Before the collapse of the bridge, we were running 6.5, 7 percent ahead of last year.

Mr. **Boehlert**. So, generally, are you keeping pace? Are you going ahead in terms of the amount of money the Thruway Authority is investing?

Mr. **Bersani**. Obviously, you heard the numbers, and if I tell you that we are budgeting $250 million for work next year and our revenue is $220 million, we are obviously spending more money then we can.

Senator **Moynihan**. You get Federal money.

Mr. **Bersani**. Yes, part of it is 4R money, and part of it had been revenues we built up. The fact of the matter is starting with 1983, we doubled our spending rate. The road is old, and, obviously, each year to do the same levels of maintenance cost more and there is more major rehabilitation needed. The fact of the matter is that between the 4R money, which we are grateful to the Senator for, and between using up our reserves, we have been able to increase our spending.

But, that must lead to the next question: when are you going to raise tolls?

Mr. **Boehlert**. When are you going to eliminate them?

Senator **Moynihan**. We are not here to ask when you are going to raise the tolls. We are here to ask when you are going to keep the agreement to get rid of the tolls.

Mr. **Levine**. Senator, may I answer that? Since January, or prior to that since last August, on an ad hoc basis, we have been meeting with the Division of the Budget and with DOT, and the prime subject is when and how we are going to turn the road over to the State in 1996.

It developed into a formal session during this January. We have most of our agreements worked out, even to the point of Civil Service staffing, Mr. Stratton, we have looked at our equitable titles and said these titles must be integrated into the State so our people are not put out on the street. We are working on agreements right now.

We will have solutions as to when and how we will turn the road over to the State in 1996. It is being worked on. You have my promise it will be done.

However, I do not control the legislature, nor does our Board of Directors control the legislature. In 1996 the bonds will be paid off. The road will be maintained in a condition that will be serviceable to the State of New York. We plan on turning it over in 1996.

Senator **MOYNIHAN**. I am glad to hear that. Why has it been kept such a secret? In terms of economic development, it needs to be toll free.

I would like to ask about the institutional separateness of the Thruway Authority from the Department of Transportation. Mr. Chairman, or Dr. Axelrod, can you tell us, what warnings does the New York Thruway have about abnormal weather, flooding, hurricanes, high tide waters?

Dr. **AXELROD**. The Thruway Authority has its own weather reporting service, they are The Weather Service, Inc. of New Bedford, Massachusetts—for forecasts. The rest of the State uses the National Weather Service.

So, while the Thruway Authority uses a different weather service than other State departments and agencies, it still is part of the State's emergency response plan. The National Weather Service reports are incorporated into the weather reporting service that go out through the State pool to all of the State agencies.

The State Thruway Authority receives its warnings and recommendations with respect to the weather through Weather Service, Incorporated. That is not to say they are not part of the system. They had been part of the State emergency management operations. They were briefed through other agencies.

Senator **MOYNIHAN**. Dr. Axelrod said they are included, Mr. Bersani, do you agree?

Mr. **BERSANI**. I guess I made a mistake.

Dr. **AXELROD**. They are included with respect to the State emergency plan which includes the State Thruway Authority with respect to certain activities. They are not part of the national weather service warning system, but they are part of the State emergency response where the thruway operates as a State agency.

Senator **MOYNIHAN**. We have contradictory testimony and the U.S. Senate may not accept some of the testimony. This is a serious point here. I am going to have to ask, Mr. Bersani, if you will submit to the committee, in writing, your understanding of the present management. I don't think you were being ironic when you said, "I guess I was wrong."

Mr. **BERSANI**. Senator, There is a dam upstream, and when the water's force becomes extraordinary, the Power Authority—it is the Power Authority, isn't it?

Mr. **LEVINE**. The Power Authority of New York. They notify how much water they let out according to how much water comes in.

Mr. **Bersani**. And is DEC on their warning list?

Mr. **Levine**. Yes, DEC is on their warning list.

Mr. **Bersani**. Is that the only one on their warning list?

Mr. **Levine**. No, they have a whole list.

Mr. **Bersani**. But not us.

Mr. **Levine**. Not us, a part of the warning system is concerned.

Senator **Moynihan**. Sir, may I ask you to give us something in writing on this situation? Dr. Axelrod, I would like to ask you to give us your understanding and, Mr. White, you do the same in writing and promptly, please.

[The information requested follows:]

NEW YORK STATE
Disaster Preparedness Commission
Corning Tower
Empire State Plaza
Albany, N.Y. 12237

David Axelrod, M.D.
Chairman

MG Lawrence P. Flynn
Secretariat

NEW YORK STATE
DISASTER
PREPAREDNESS
COMMISSION

May 18, 1987

The Honorable Daniel Patrick Moynihan
United States Senate
Russell Senate Office Bldg., Room 464
Washington, D.C. 20510

Dear Senator Moynihan:

Pursuant to conversations with your staff, attached is a summary of the findings of our own review of the preparedness questions associated with the Schoharie Creek bridge collapse. To the best of our knowledge, this accurately reflects the steps taken and what information and advisories were transmitted to different parties and agencies during the period leading up to the flooding that occurred over the first weekend in April.

This report makes clear that the Thruway Authority was involved in advance briefings conducted by the State Emergency Management Office. The Authority also had notice from its own weather service about potential flooding that weekend. However, the narrative also makes plain that data on extraordinary water flows provided by the New York Power Authority did not reach the Thruway Authority, though it did reach the Schoharie County Sheriff and the Warnerville substation of the State Police.

As indicated in testimony submitted to the hearing May 4 by Dr. Axelrod, this review "shows a lack of coordination and it shows the need for better analysis and communication."

We trust that this clears up any confusion that might have developed at the hearing. Please do not hesitate to contact us with any further questions you or the committee staff may have.

Sincerely,

David Axelrod, M.D.
Chairman
Disaster Preparedness Committee

Franklin E White

Franklin E. White
Commissioner
Department of Transportation

Henry A Bersani

Henry A. Bersani
Chairman
NYS Thruway Authority

Attachment

PREPAREDNESS

Flooding in the Schoharie basin is not a new phenomenon. Long-time residents of the area recall, in particular, the floods of 1938 and 1955, which damaged bridges, closed roads and forced many to evacuate their homes.

In recognition of this history of flooding and to discuss emergency preparedness procedures in the event of flooding or a dam failure, a meeting was held on February 26, in the Grand Gorge (Delaware county), offices of the New York Power Authority, operator of the Gilboa Dam; attending were representatives of Schoharie and Montgomery County Emergency Management Offices; the State Department of Transportation; State Police at Warnerville (based on Rt. 7, south of Cobleskill); and the Schoharie County Sheriff's Office.

On March 4, the State Emergency Management Office (SEMO) issued an advisory which warned of a potential flood emergency in many areas of the state stemming from above-normal accumulations of snow and high water content of the snows that had fallen.

This advisory was based on a statewide risk assessment obtained from the National Weather Service (NWS), State Department of Environmental Conservation and Cornell University; all agreed there was a strong potential for late winter and early spring flooding. The potential for flooding was deemed greatest in the Southern Tier, central New York, Mohawk Valley, Catskills and Hudson River Valley.

County emergency managers in potentially affected areas were notified of the flood potential. They, in turn, were urged to advise other local officials and begin preparedness efforts. In conjunction with these efforts, Governor Cuomo designated March 15-21 as Flood Awareness Week in New York State.

On March 12, SEMO conducted a State agency liaison meeting in Albany to discuss flood preparedness, threat and risk assessment, state agency response and recovery procedures, and federal responsibilities. Among the agencies represented at this gathering were: U.S. Army Corps of Engineers, the Division of State Police, State Energy Office, Department of Environmental Conservation, Department of Transportation, and State Thruway Authority.

Throughout the week of March 16, SEMO conducted press briefings involving local emergency preparedness officials from the Catskills, the eastern Southern Tier and the Capital District which were considered the areas most susceptible to flooding with onset of snowmelt and spring warming and showers. Montgomery and Schoharie counties were represented at the March 16 press briefing in Albany.

FRIDAY, APRIL 3

Following receipt of weekend storm advisories from the National Weather Service and the Department of Environmental Conservation, the State Warning Point issued a flood potential weather statement at 10:20 a.m. on April 3, to the following areas: all counties in the Catskills, Susquehanna and lower Hudson River Valleys. The State Warning Point (SWP) is a communications and operations center located in the Public Security Building on the State Campus in Albany; it is operated during normal working hours by SEMO, and at other times by the Division of State Police.

Based on heavy rainfall predictions by the NWS for the eastern Susquehanna and Catskill regions, the SWP elevated its previous alert with a flood watch statement at 1:50 p.m. on that same day, to all counties in the Catskills, Susquehanna and lower Hudson Valley, beginning on the following day, Saturday. This advisory was not communicated to the State Thruway Authority, which depends on its own weather consultants, Weather Services Corp., of New Bedford, Massachusetts, for forecasts.

Over the weekend of April 4-5, the State Emergency Management Office stationed a member of its crisis staff in Schoharie to work with local officials in Schoharie County and provide on-the-scene coordination, assistance and communication in the event of flooding.

SATURDAY, APRIL 4

Following its standard water management operating procedures, the New York Power Authority, at 10:06 a.m. on April 4, notified the Schoharie County Sheriff that flow from the Gilboa Dam had reached 6,300 cubic feet per second (CFS). Flooding is expected to occur when flow exceeds 21,000 CFS. At 12:43 p.m. that day, water discharge from the dam surpassed 10,000 CFS. Notification of this flow was communicated by NYPA to the Schoharie County Sheriff at 12:51 p.m., and to the Warnerville barracks of the State Police at 12:57 p.m. The Schoharie County Sheriff routinely conveys dam flow rates to the County Emergency Management Office, which, in turn, passes them along to the SEMO representative and the Montgomery County Emergency Management Office. This was done on April 4.

The following flow rates were reported by NYPA to the Sheriff during the remainder of the day (April 4):

2:05 p.m. - 14,000 CFS
3:26 p.m. - 19,650 CFS
4:24 p.m. - 24,300 CFS

5:55 p.m. - 26,850 CFS
5:33 p.m. - 32,400 CFS
6:05 p.m. - 38,100 CFS
6:55 p.m. - 44,400 CFS
8:54 p.m. - 61,200 CFS

At 8:20 p.m. on Saturday, April 4, SEMO was notified by its representative in Schoharie County that the Gilboa Dam flow had climbed to 45,000 CFS and that officials of Schoharie County had begun evacuating people living along Schoharie Creek. The U.S. Army Corps of Engineers and Federal Emergency Management Agency were advised of this flooding by SEMO.

At 8:45 p.m., State Police in Fonda were notified by the Schoharie County Sheriff that flooding was occurring in the area of North Blenheim and the Village of Middleburg. State Police patrols from Fonda, Warnerville and Duanesburg reported road closings in their areas.

At 9:00 p.m., SEMO notified the Montgomery and Schenectady County Emergency Managers that the Gilboa Dam was reporting a flow of 61,000 CFS. At approximately the same time, the Montgomery County Sheriff indicated he notified the Fultonville toll exchange of the Thruway that severe flooding was taking place along the Schoharie Creek. Thruway and State Police officials have been unable to confirm this notification. At any rate, no notice or alarm was transmitted.

At 10:35 p.m. on April 4, SEMO chief-of-staff was notified by the liaison person in Schoharie that water flow at the Gilboa Dam had reached 64,000 CFS. This information was provided to the Montgomery County Emergency Manager.

SUNDAY, APRIL 5

At 1:10 a.m., SEMO Eastern District notified the SEMO chief-of-staff that the Schoharie Creek had crested at Prattsville and Middleburg; no fatalities or injuries reported.

At 7:05 a.m., SEMO received a request from Montgomery County Sheriff for an air rescue of five people stranded by high waters in Lost Valley. Division of State Police was contacted and dispatched a helicopter for rescue, which was successful.

At 9:00 a.m., Schoharie County officials told SEMO that the water levels of Schoharie Creek remained high but were slowly receding. The Schoharie County Sheriff reported several roads closed indefinitely in the towns of Fulton and Gilboa. The Montgomery County Sheriff reported the closing of Rt. 5S between Auriesville and Fort Hunter (water was over the roadway), the Route 161 bridge at Mill Point, and Power House Road in the Town of Florida.

A call to the National Weather Service in Albany at 9:32 a.m. by the SEMO chief-of-staff brought the report that additional heavy rains were expected in the Catskills. From its private weather consultant, the Thruway Authority received Sunday a.m. forecasts for the Albany-Syracuse section indicating occasional rain, moderate to heavy at times, with some flooding possible in the late day or night. These forecasts were not as strong in their warnings about heavy weather as was the NWS.

At 10:15 a.m. and 10:35 a.m., respectively, the U.S. Army Corps of Engineers and the State Department of Transportation were briefed by SEMO on the road and potential bridge problems resulting from flooding along the Schoharie.

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These reports document that extensive notice of potential and actual flooding in the Schoharie basin was provided to various concerned agencies over a considerable period of time leading up to the Thruway Bridge collapse at 10:45 a.m. April 5. The State Police helicopter rescue was the direct result of an effective emergency communication link between Montgomery County forces and the state emergency apparatus. The Montgomery County Emergency Management Office had helped to coordinate the evacuation of families along the Schoharie Creek before the bridge collapse.

None or very little of this information was effectively communicated to the Thruway Authority. The question of the Montgomery Sheriff's Saturday night call to the Fultonville interchange is immaterial, for there existed no procedure for transmission of emergency alerts from local authorities to the Thruway Authority.

The State Police Troop T maintains a 24-hour presence in the Thruway Authority Communication Center in Albany, and receives statewide State Police teletype messages at that location. Information of direct concern to the Thruway can be handed over to the senior Thruway dispatcher at the adjacent desk. On the night of April 4 and the morning of April 5, no notice was provided, because the flooding reports from the Schoharie basin were not unusual.

As the Montgomery County Emergency Management Director was to say two weeks after the tragedy, that weekend's flooding "was not an unusual event for us."

Also, whereas the Warnerville substation of the Troop G had received alerts about very high water flows, it did not communicate that information to the State Police on the Thruway, who constitute a different troop, Troop T.

There is no reason to believe that any of the data on stream flows, local road closings or rainfall estimates, would have led the Thruway Authority to close the Schoharie Creek bridge. The Authority had never closed a bridge in such a circumstance.

NEW YORK STATE
Disaster Preparedness Commission

Corning Tower
Empire State Plaza
Albany, N.Y. 12237

David Axelrod, M.D.
Chairman

MG Lawrence P. Flynn
Secretariat

NEW YORK STATE
DISASTER
PREPAREDNESS
COMMISSION

July 9, 1987

Dear Senator Moynihan:

Thank you for the opportunity to provide additional material to the Subcommittee on Water Resources, Transportation, and Infrastructure regarding the collapse of the Schoharie Creek bridge. We will continue to make available any new information you may require and any new reports or scientific data developed by the State of New York or its consultants. I am assured the Thruway Authority will similarly make all relevant information available to the Subcommittee.

We are not now in a position to identify the precise cause of the collapse. I have attached a copy of the preliminary report from consulting engineers retained by the Thruway Authority to conduct an independent forensic examination of the collapse. A review of this report indicates a continuing concern with the question of scour, but no final conclusion. Any definitive conclusions must await a final report from the consultants, expected at the end of July. We will provide your staff with copies of the final report as soon as it is available.

This preliminary report, in conjunction with the previously submitted report by the Disaster Preparedness Commission, fully details the roles and assignments for all parties in the ongoing investigations.

Meantime, the administration has taken a number of steps to improve the emergency communications network and the State's preparedness for natural emergencies such as floods. The Thruway Authority has now been formally included in the emergency communication network, not simply because of the Thruway's role as an emergency transportation corridor, but also with a view toward protecting the Authority's own infrastructure.

For instance, on July 2 a flood watch was issued for sections of the Catskills, and the State Emergency Management Office (SEMO) directly notified Thruway Headquarters. The SEMO is responsible for coordinating emergency planning and preparations and communications.

Routinely, the Thruway Authority now receives National Weather Service forecasts and bulletins as well as the reports from its own weather consulting service. The National Weather Service reports are relayed by SEMO and the State Police, when necessary.

A review of other adjustments to the emergency communications system is continuing, and recommendations to the Governor on this subject are expected in our final report. One concern is the lack of totally compatible emergency communication networks throughout state and local levels of government.

I appreciate your continuing interest, and your help in securing federal assistance for the areas affected by the April flooding.

Sincerely,

David Axelrod, M.D.
Chairman

Hon. Daniel Patrick Moynihan
United States Senator
Chairman
Subcommittee on Water Resources,
Transporation and Infrastructure
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510-6175

Dr. **Axelrod**. There are deficiencies in the emergency response system that need to be ironed out. We need to be better coordinated and better prepared, and we need a better system to alert us.

Senator **Moynihan**. Surely if someone asks how much water was released from the Gilboa Dam, someone must be able to answer.

Mr. **Levine**. Yes, sir.

Senator **Moynihan**. There is a gentleman from the State police in the audience. I don't want to empanel him, but have the State police been routinely told about water coming from the dam, sir.

Captain **Darby**. The State police, no.

Senator **Moynihan**. Would you identify yourself, please?

Captain **Darby**. Captain Gerald T. Darby.

Senator **Moynihan**. You were not told?

Captain **Darby**. No, sir.

Senator **Moynihan**. Water coming out of a tap looks like simple stuff, but the volume we are talking about is throwing 400,000 tons against a pile, right?

Mr. **Stratton**. Right.

Senator **Moynihan**. Might as well be that much solid steel. So, the State police did not hear, the Thruway Authority did not hear——

Dr. **Axelrod**. Senator, if I might, I think it is important to recognize that the State police at Fonda were notified by the Schoharie County Sheriff that flooding was occurring at 9:00 that Saturday evening. The State emergency management office notified the Montgomery and Schenectady emergency managers, they were notified, and certainly, the Fonda police. The State police were notified, and they had the information from the State water department which had that very same information.

So, certain local police involved in patrolling the areas would have been aware from direct contact from the Schoharie County Sheriff that was made by the Gilboa Dam operators of the flow of water.

Senator **Moynihan**. We are going to get a narrative account of this event from the National Transportation Safety Board, I assume.

I have one last question, and then I will ask my colleagues if they have any. I don't think, as a matter of public responsibility, we can ignore Mr. Bersani's very forthcoming statement that there was pressure to finish this bridge on time.

Mr. **Boehlert**. Senator, if I may ask, was it the pressure to open the road on time, or was it this particular bridge you are referring to? I am not quite clear.

Dr. **Axelrod**. The only thing I can comment upon is the newspaper accounts at the time, Senator, whereby allegations were made by elected Governor Harriman that there was excessive haste with respect to the bridge, excessive costs associated with efforts to complete the bridge. Those were contained in a number of newspapers, including the Amsterdam News, in October and November of 1954. We can provide you with copies of those newspaper accounts in which there are statements by the Democratic Governor at the time.

Senator **Moynihan**. I was in that race. Governor Harriman was running against a very respected Member of the Senate. I do know there was pressure to finish the bridge on time, the time being before the election. What exactly one candidate for office said about this situation I'm not sure, I am certain Governor Harriman is not one who would make such a response.

Dr. AXELROD. I have seen most of those documents, sir. I don't believe there is anything specific that one could point to that would suggest that these activities——

Senator MOYNIHAN. I am asking Mr. Bersani. Mr. Chairman, any specific responsibility that——

Mr. BERSANI. Excuse me. When you use the word, "specific," let's go back to the guard rails. You know you wouldn't open a bridge without guard rails unless there was a good reason to do it, and there is no other reason I can think of except for campaign purposes.

I said earlier and I say again, how much of this can be proven? Well, the fact that Governor Dewey rode in a car across the bridge without guard rails on it, there was no other reason I can think of to do that except for campaign purposes. Now, proving it is another thing.

Senator MOYNIHAN. The issue here would be less assuming there were careful drivers, but what about the foundation of the bridge? You have raised questions and do so very handsomely. We want to thank you.

Mr. BERSANI. One more stab at it. We know that the Governor drove across the bridge without guard rails. That, obviously, was rushed. Now, the question is, was any other rushing done to get it to that point?

Mr. BOEHLERT. Precisely.

Mr. BERSANI. I don't know. As I said earlier, I don't know that can be proven. I did say before and I will say it again, I was surprised to find it out.

Senator MOYNIHAN. You just said that to me. You are going to try——

Mr. BERSANI. We will take another look.

Mr. STRATTON. I want to make myself perfectly clear. Mr. Bersani said that the Governor rode across a bridge that had no guard rails on it.

Mr. BERSANI. Governor Dewey.

Mr. STRATTON. On what are you basing that statement?

Dr. AXELROD. Based on photographs.

Mr. STRATTON. Okay.

Guard rails in the areas where there were jump-off spaces.

Senator MOYNIHAN. Is that clear?

Mr. STRATTON. That corroborates it.

Senator MOYNIHAN. I think those days are not so far away.

Mr. STRATTON. I don't recall anybody going over the bridge without guard rails.

Could I ask Dr. Axelrod, you are Commissioner of Health, are you not?

Dr. AXELROD. Yes, sir.

Mr. STRATTON. I find it intriguing that the Commissioner of Health should be the lead-off man on this most important aspect of the State's responsibility in connection with this tragedy. Is that part of the responsibility of the Commissioner of Health?

Dr. AXELROD. It is part of the responsibility of the Chairman of the Disaster Preparedness Commission by executive law in the State of New York which has been established and over which I currently serve as Chairperson. The Governor has asked me to coordinate activities with relation to the disaster, primarily the vulnerability of structures that exist around the State, and the purpose was, one, what we might do with regard to health and safety. Therefore, I was asked to assume and coordinate the role.

Mr. STRATTON. I see, thank you.

Mr. BOEHLERT. I guess this is the concluding panel. I would like to, at this point, Mr. Chairman and Senator, as your Congressman, congratulate you for a job well done. I would like to thank all of our witnesses and assure them this is just not one day of public relations. I would like to clarify that. This is serious business, and we intend to follow through.

When I go back to Washington, I know we will be coordinating our activities, for example, dealing with the National Academy of Engineering to have some very specific requirements and to work in conjunction with my assignment on the Committee on Public Works and Transportation. I know the Senator will be providing leadership on the other side. It is unusual for a State Governor to ask for a Federal Mandate. Thank you very much.

Senator MOYNIHAN. I want to thank all of our witnesses and thank the audience who have been so considerate. I notice there is something new in the way of making tapes—simple notes on a piano.

We have learned a lot. We have learned how much more there is to learn. We look forward to hearing from the State in this regard. We take your message very directly.

Mr. STRATTON. Doctor, we did not get a copy of your statement.

Dr. AXELROD. We will make sure you have one, sir.

Mr. STRATTON. Provide us with one.

Senator MOYNIHAN. I think we have learned some things perhaps we might not have heard. And I will note, Mr. Chairman of the Thruway Authority, that the tolls will come off the Thruway in 1996, regardless. You are going to turn over to the State a first class highway, and I have every confidence in that.

The hearing is now closed, and the record will remain open for five working days to anyone who wishes to submit a statement or amend a statement.

[Whereupon, the subcommittee adjourned, to reconvene subject to the call of the Chair.]

[Statements and other material follow:]

STATEMENT OF REX LEATHERS
FEDERAL HIGHWAY ADMINISTRATION
U. S. DEPARTMENT OF TRANSPORTATION

HEARING BEFORE THE SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION AND INFRASTRUCTURE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

May 4, 1987

The tragic April 5 collapse of the New York Thruway Authority Bridge carrying Interstate 90 traffic over Schoharie Creek was a dramatic reminder to us all of the necessity of doing everything that we can to ensure bridge safety. Not only were 10 lives lost but the general effect upon the overall economy of New York and the Northeast is staggering, not to mention the inconvenience thousands of motorists now face.

The travelling public expects that roads and bridges in the United States are safe to travel. When a catastrophic incident like the Schoharie Creek Bridge collapse occurs, those of us who are entrusted with the responsibility for overseeing public safety must evaluate what happened and why. Further, we must act to take any reasonable actions we can to prevent such occurrences in the future.

Bridge collapses are uncommon events -- for good reason: the December 1967 collapse of the Silver Bridge over the Ohio at Point Pleasant, West Virginia, prompted national legislative action. Starting with the 1968 Federal-Aid Highway Act, the Congress directed the U. S. Secretary of Transportation to develop a bridge inspection standard guide for all States to use. In the 1970

Federal-Aid Highway Act, the Congress directed the Secretary to develop national bridge inspection standards in consultation with knowledgeable individuals and the States and makes its application mandatory for bridges carrying the Federal-aid highway system. The final version of these first National Bridge Inspection Standards (NBIS) was published in the Federal Register in April of 1971. At the same time, bridge inspector training was developed, manuals were published, inspection techniques and equipment were developed and the program was modified as it progressed. The 1978 Surface Transportation Assistance Act brought about the modification of the NBIS to encompass all bridges carrying public roads. Again, new techniques, training and inspection equipment were developed concurrently. Since the current version of the NBIS was published in May of 1979, the FHWA has developed new manuals to supplement the original Bridge Inspector's Training Manual and has continually offered training and technical assistance to the States as new knowledge regarding bridge inspection and potential failure modes has been gained.

The NBIS encompass five (5) major topics: (1) Inspection Procedures, (2) Frequency of Inspections, (3) Qualifications of Personnel, (4) Inspection Report, and (5) Inventory. Each of these topics includes definitive requirements which, along with references in the NBIS, provide the basic criteria for the inspection of bridges.

Because States are by and large doing a good job of meeting the requirements of the NBIS, bridge failures in the United States generally are few and far between. Various estimates of the average number of annual bridge failures in the country vary from several dozen to more than 100 per year. We are inclined to believe that the number is generally in the dozens rather than hundreds, and more importantly, a typical bridge failure involves no fatalities.

The most common cause of bridge failure stems from floods. While hydrologists can predict with reasonable accuracy the chance of occurrence of a flow of a given magnitude in any given year, flood prediction is not a precise science and it is not societally acceptable or practical to design all bridges for floods which are predicted to occur, on an average, only once every 500 to 1,000 years of more. For example, the National Flood Insurance Program Standard is based upon floods which might occur once every 100 years. The second most common cause of bridge failure results from trucks violating load limitations. Typically, the bridge collapses and the truck driver is not injured. These types of incidents were common in the oil fields during the energy crisis of the mid-1970's.

The third most common cause of bridge failure is collision damage by either vehicles or vessels. Finally, some failures occur as the result of general deterioration or fatigue of the load-carrying members. This is a very rare event in the era of the National Bridge Inspection Standards. Such deterioration is almost always discovered by diligent inspectors long before collapse.

For as long as bridges have been built by men, they have been destroyed by scour. Generally, scour is the displacement of the stream bed material brought about as the flood stage stream flow volume and velocity increases. These increases in flow volume and velocity generate additional tractive or drag forces which move larger and larger particles to the point that substantial rocks and boulders can be displaced in extreme cases. In the case of scour near bridge piers, the flow of water is often deflected downward along the pier face to form almost a jetting action. This removes more and more foundation material until a balance between material scoured out of the hole and material carried into the hole is reached. As the flood crest passes and the water flow volume and velocity decreases, water borne particles of sand, gravel and rocks are gradually deposited back into any scour holes. Thus, after a flood subsides, it is often not possible to see any remaining scour hole in the vicinity of bridge piers or abutments.

Beginning in the early 1950's, the FHWA (Bureau of Public Roads) has supported extensive stream stability research which has resulted in numerous publications. The most notable of these is Highways in the River Environment, which is a compilation of the state-of-the-art of river mechanics practices, including scour estimation. This publication is the cornerstone of an NHI training course which has been taught nationwide since 1973. This manual is currently being updated. FHWA, in cooperation with the USCG and State highway agencies, is conducting an ongoing effort to collect scour data at field sites to improve scour estimation procedures. In addition, we are preparing guidelines for identifying and correcting stream instability problems.

Current acceptable practice is to predict scour depths and design the bridge foundations for anticipated scour conditions by:

- o setting the base of pier or abutment footings below predicted scour depths; or,
- o driving piling to a depth well below anticipated scour depths; and/or,
- o providing riprap, spur dikes or other river training devices to minimize the extent of local or contraction scour near bridge foundations.

Because of the costs and hazard of bridge failures due to scour, FHWA recommends that a higher standard be used for foundation design than is used for design of the waterway opening and bridge approaches. Occasional overtopping of a bridge and its approach roadways may be tolerated, since repairs can quickly be made and the highway put back in service after the flood. If the bridge itself fails, however, the direct and indirect costs of repairs and traffic delays are much greater and last over a much longer period of time.

The various FHWA and AASHTO publications regarding bridge and hydraulic design contain ample caution concerning the need to protect bridges from scour failure.

From the beginning of FHWA's involvement with bridge inspection, or manuals, training courses and policies have included a substantial amount of information regarding the need for inspection and evaluation of scour and its potential effect on the safety of individual bridges. It should be noted that the New York Department of Transportation's bridge inspection manual has some excellent instructions and procedures noted for evaluating scour damage; further, it is the State's policy to provide piling under all river piers for scour protection. The AASHTO Manual for Maintenance Inspection of Bridges contains a requirement that the underwater integrity of piers and bents be checked at least once every five years. In June of 1985, the FHWA issued a policy memorandum requiring field offices to be sure that States have an underwater inspection program for bridges. This policy was reinforced with an additional policy memorandum in April of 1986.

In order to further emphasize the need for underwater inspection at bridges, proposed new record keeping and inspection plan requirements for underwater inspection are contained in an April 7 Notice of Proposed Rule Making which the FHWA has open to public comment until June 8. This same NPRM, if adopted in its present form, would require similar inspection plans and procedures for bridges with fracture critical members, prompt updating of bridge inventory computer files when bridges are load restricted and would allow States to vary the inspection frequency for newer bridges which recent inspections have shown to be in good condition. This will allow States to concentrate resources on those bridges that may require more thorough review.

Partially as a reaction to the April 5 collapse of the Thruway Bridge over Schoharie Creek, we issued, on April 17, a special memorandum to all of our field offices reiterating our previous guidance on underwater inspection and inspection of bridges for potential scour damage. Also included was a discussion of Federal-aid highway fund eligibility for correction of hydraulic deficiencies at bridges. The purpose of this package was to provide the States, through FHWA field offices, a concise package of scour and hydraulic design material related to potential bridge foundation failures.

In summary, there is now a considerable amount of scour design, inspection and maintenance material available and in general use throughout the engineering profession. It is generally used on a day-to-day basis by bridge engineers and inspectors. Unfortunately, there will continue to be rare instances where the physical forces of nature may exceed those limits which are practical to design against and detect during normal inspections.

However, the FHWA and the U. S. Department of Transportation will do everything in our power to prevent such future occurrences.

Thank you Mr. Chairman. I would be most pleased to try to answer any questions you or the panel may now have.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
WASHINGTON, D.C. 20590

OFFICE OF
THE ADMINISTRATOR

July 10, 1987

IN REPLY REFER TO:
HNG-1

The Honorable Daniel Patrick Moynihan
Chairman, Subcommittee on Water Resources,
Transportation, and Infrastructure
United States Senate
Washington, D.C. 20510

Dear Senator Moynihan:

Thank you for your June 19 letters to Mr. Rex C. Leathers, Associate Administrator for Engineering and Program Development, and Mr. Stanley Gordon, Chief of the Bridge Division. You followed up on their May 4 testimony in Amsterdam, New York, before the Subcommittee on Water Resources, Transportation, and Infrastructure.

We have completed our responses to the 15 questions you asked about the Nation's bridge program and about the collapse of the Schoharie Creek bridge. I'm pleased to enclose our comments. They are based in part on data in the National Bridge Inventory and our Eighth Annual Report to Congress on the Highway Bridge Replacement and Rehabilitation Program. I'm enclosing a copy of the Eighth Annual Report, which the Subcommittee may find useful in studying the condition of the Nation's bridges.

Please let me know if we can provide any further information.

Sincerely yours,

Robert E. Farris
Deputy Administrator

2 Enclosures

QUESTIONS AND ANSWERS

QUESTION:

1. What are your best estimates of the costs for both the temporary bridge facilities and for replacement of the New York State Thruway bridge?

ANSWER:

The bids for the temporary bridges (redecking the Route 55 bridge and the abandoned NYC railroad bridge as well as ramp access to and from these bridges) are approximately $6 million.

The low bid for the replacement structures is approximately $12.5 million.

QUESTION:

2. There is confusion about some of the terminology used to describe deficient bridges. What is the distinction between a structurally deficient and functionally obsolete bridge? Are there clearer terms that might be used instead?

ANSWER:

A structurally deficient bridge, as defined by the Federal Highway Administration (FHWA), is one that (1) has been restricted to light vehicles only, (2) is closed, or (3) requires rehabilitation to remain open; a functionally obsolete bridge is one on which the deck geometry, load carrying capacity (comparison of the original design load to the current State legal load), clearance, or approach roadway alignment no longer meet the usual criteria for the system of which it is an integral part.

The terms structurally deficient and functionally obsolete were created by Congress and defined by FHWA and are accepted nationally. These definitions have been slightly modified over the years in an effort to provide more clarity. However, we agree that the terms are somewhat misleading and we are working on some new terminology.

QUESTION:

3. FHWA recently proposed a change in the mandatory two-year inspection interval for bridges. A similar proposal in 1983 was subsequently withdrawn. Why is this change being proposed now and would it not weaken existing bridge inspection standards?

ANSWER:

On January 20, 1983, FHWA published a Notice of Proposed Rulemaking (NPRM) in the Federal Register on increasing the mandatory 2-year inspection interval for bridges. The NPRM proposed to permit variations in the mandatory 2-year interval between inspections under certain conditions. Two categories suggested for possible consideration were culverts and newly completed structures which had received an initial 2-year inspection without any indication of a change in the structure condition.

A majority of the commenters believed the inspection interval could be increased for certain bridges without additional risks to the public. However, many commenters wanted to retain the 2-year interval. In light of the wide division among the various entities as to which types or groups of bridges could be included in an increased inspection interval, the FHWA determined that the revisions as proposed should be further reviewed and evaluated.

Upon further reviews and analysis, the FHWA issued a modified NPRM on April 7, 1987. The FHWA again made the tentative determination that the inspection interval can be increased for some categories of bridges with no increase in risk to the public. Any funds saved by this action could be applied cost-effectively toward the removal from service of additional deficient bridges.

The proposed changes would not weaken existing bridge inspection standards. They would provide State highway agencies greater flexibility with which to use available inspection resources in a cost-effective manner. It is intended that the proposed revision would encourage the efficient use of resources without compromising the safety of the traveling public.

QUESTION:

4. How valuable are underwater bridge inspections? Please discuss the underwater inspection requirement FHWA recently proposed.

ANSWER:

Underwater bridge inspections are very valuable because they:

1. Provide assurance that the bridge is structurally safe for its designated use.
2. Identify actual and potential sources of trouble at the earliest possible stage.
3. Record systematically and periodically the state of the structure.
4. Provide a feedback of information to designers, contractors and owners on features which are likely to give maintenance problems.

5. Check on the effects of any changes in permitted loads on a bridge.
6. Provide the necessary information on which decisions will be made for carrying out maintenance, repair, replacement or rehabilitation of the structure.

As a part of the proposed revisions to the National Bridge Inspection Standards (NBIS) issued in the NPRM on April 7, 1987, the FHWA would require the States to identify bridges having fracture critical members or bridges which warrant underwater inspection or other special inspection consideration. These bridges would then be earmarked and the inspection date and results of inspection of these bridges would be tracked to ensure that they are inspected and evaluated to minimize risk to the public.

QUESTION:

5. The Mianus bridge in Connecticut was 25 years old when it collapsed in 1983 and the Thruway bridge in New York was a little over 30 years old. These were obviously not new bridges, but they were not very old bridges either. How serious a bridge problem is there nationwide?

ANSWER:

Of the 575,607 bridges in the National Bridge Inventory (NBI) as of December 31, 1986, 243,646 (42 percent) were classified as deficient. Of these, 131,562 (23 percent) were classified as structurally deficient and 112,084 (19 percent) were classified as functionally obsolete. However, only 220,308 (38 percent) were eligible for the Highway Bridge Replacement and Rehabilitation Program (HBRRP) because of program regulations and policy establishing criteria for eligibility. Many of these bridges will become eligible for the HBRRP as they age and additional deficiencies develop.

Perhaps the best way to describe the seriousness of the bridge problem is to say that we can "hold our own" over the short term, 3 to 5 years, at current funding levels. Beyond the short term, however, the FHWA expects bridge needs to increase and continue to increase for many years. The projected growth in bridge needs is a result of the building boom of the 1950's and 1960's at the height of Interstate highway construction. Bridge construction during this 20-year period accounts for about 40 percent of the deck area of all bridges in service today.

QUESTION:

6. FHWA estimates that $51.4 billion is necessary to replace or rehabilitate all deficient bridges. What data are used to support that estimate? What is the proper federal role in attempting to meet bridge needs that, according to FHWA's estimate, may be 30 times the amount of federal funds now available for bridge repair and rehabilitation? Given present funding levels, is it possible for the States to proceed with repairs at a rate faster than that at which bridges are deteriorating?

ANSWER:

Using bridge cost estimates the States submitted to the NBI, the FHWA has calculated a nationwide average cost per bridge for each highway system for: (1) bridge replacement and (2) rehabilitation. These averages were used to estimate national deficient bridge costs. The following table estimates the cost of replacing or rehabilitating eligible deficient bridges to meet current standards.

ESTIMATED COST OF REPLACING OR REHABILITATING DEFICIENT BRIDGES ELIGIBLE FOR THE HBRRP
Costs Include Federal and State Shares

System	Bridges Eligible for Replacement or Rehabilitation (Sufficiency Rating < 50)	Estimated Replacement Cost (in Billions)	Eligible for Rehabilitation (Sufficiency Rating 50 - 80)	Estimated Rehabilitation Cost (in Billions)	Total Cost (in Billions)
Interstate	627	$ .7	3,695	$ 2.2	$ 2.9*
Primary	8,344	8.1	13,216	5.2	13.3
Secondary	13,650	4.8	14,884	2.0	6.8
Urban	4,363	5.1	5,079	2.2	7.3
Total Federal-Aid	26,984	$ 18.7	36,874	$ 11.6	$ 30.3
Off-system	107,661	16.7	48,789	4.4	21.1
Total	134,645	$ 35.4	85,663	$ 16.0	$ 51.4

* Interstate bridge needs are also eligible for funding under the Interstate Resurfacing, Restoration, Rehabilitation and Reconstruction Program.

In the absence of sufficient funds to meet all bridge needs, the primary Federal role is to encourage the States to use effective planning policies and to make efficient use of all available resources. Adoption of a bridge management system is essential for each State to integrate all decisions on bridges and establish priorities from the initial planning through the design, construction, inspection, and maintenance phases. In terms of money, the Federal role is determined by the Congress. The 1987 Surface Transportation and Uniform Relocation Assistance Act (STURAA) enacted on April 2, 1987 (Public Law 100-17), provides $1.63 billion per year in HBRRP funds for FY 1987 through FY 1991. These funds, along with Federal-aid funds from non-HBRRP categories, will enable FHWA to "keep even" with bridge needs through FY 1991.

Given present funding levels, it will not be possible for the States to proceed with repairs (i.e, rehabilitation and replacement) at a rate faster than that at which bridges are deteriorating.

QUESTION:

7. According to the most recent FHWA bridge report, there are 243,646 deficient bridges in the country. Yet the term "deficient" does not imply unsafe, according to FHWA. Please comment on the dangers or risks these deficient bridges pose. What would be the cost to replace or rehabilitate bridges that present an unacceptable risk to users?

ANSWER:

The fact that a bridge is "deficient" does not imply it is unsafe. The FHWA does not maintain a list of unsafe bridges. The purpose of the National bridge inspection program is to keep the public from traveling on unsafe bridges. Most bridges in need of repair or replacement are not unsafe. Many deficient bridges can continue to serve most traffic with proper load posting and enforcement, and by the use of traffic control devices such as roadway striping, signs, signals and crash cushions.

QUESTION:

8. How do States prioritize their bridge projects? How does FHWA monitor bridge program spending by the States?

ANSWER:

After evaluation of the inventory and assignment of sufficiency ratings, the FHWA provides the State with a selection list of bridges within the State that are eligible for apportioned HBRRP funding. From that list the State selects bridge projects.

Funds apportioned to a State are made available throughout each State on a fair and equitable basis. Consideration is given to projects which will remove from service highway bridges most in danger of failure. Not less than 15 percent nor more than 35 percent of these apportioned funds are expended for projects located on public roads off the Federal-aid system.

The FHWA formally monitors bridge program spending by using the same accounting procedures that are used with other funding programs. FHWA Headquarters and field personnel routinely review the procedures that the States use for distributing funds during annual NBIS and HBRRP reviews conducted in the States.

QUESTION:

9. How does New York's bridge inspection program compare to that of other States?

ANSWER:

The FHWA's program review in the State in 1986 shows that:

> Overall, New York's bridge inspection program compares very favorably with the other States in its FHWA region (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, Rhode Island, Vermont and Puerto Rico) and nationally as well. The inspection teams are well equipped and the State has an on-going bridge inspection training program for its inspectors. The State is lagging in the area of load rating and load posting. A backlog of load rating data has yet to be evaluated. The State is making an effort to reduce the backlog but progress is slow. Another problem area is the reluctance of the Port Authority, which owns approximately 80 bridges, to respond favorably to the State's frequent requests for inspection results.

QUESTION:

10. How does the condition of New York bridges and highways compare with that in other States?

ANSWER:

With the large variation in the number of bridges in the States, perhaps the best way to compare deficiencies is by percentage. New York has the largest percentage of structurally deficient bridges with 52 percent of its Federal-aid system bridges and 66 percent of its off-system bridges classified as structurally deficient. New York has the second largest percentage nationally on both the Federal-aid and off-system of the total number of deficient bridges with percentages of 59 percent for the Federal-aid system and 76 percent for the off-system.

QUESTION:

11. At the hearings, Representative Boehlert asked how many bridges are closed per year for safety reasons. In checking the bridge inventory, can you now provide an estimate? Also, how many bridges are newly load-posted per year?

ANSWER:

Data obtained from the NBI show that 1,439 bridges are listed as closed in June 1987 that were not listed as closed in June 1986. Also, 14,543 bridges are now posted which were not posted in June 1986. Since most States submit data to the NBI only once a year, the actual numbers probably are greater. In some cases emergency work begins as soon as a bridge is posted or closed and the work is completed before the posting or closure is entered in the NBI. Of course, the State-maintained file will include the appropriate coding for the time the bridge is posted or closed.

QUESTION:

12. How many bridges are there nationally with the same design as the Schoharie bridge? What is their safety record?

ANSWER:

The NBI does not have sufficient data to answer this question. It would be necessary for us to request this information from each State and local government. The NBI was not designed for such detailed information but only to provide general data for determining conditions of basic bridge elements such as the deck, superstructure and substructure.

QUESTION:

13. Please comment on funding and training for the bridge inspection program. Is enough money available, and are inspectors being properly trained?

ANSWER:

We believe that sufficient funds are available for bridge inspection and training and that bridge inspectors are being properly trained.

Federal-aid funds available for bridge inspection are HBRRP, Highway Planning and Research (HPR) and an additional limited sum of specified apportioned funds from research and planning [Section 307(c)(3)]. It is each State's decision whether to use some of these funds or State or local funds for inspection. Federal-aid available for training of bridge inspectors are HPR funds and additional limited funds available from specified apportioned funds permitted under Section 131, National Highway Institute, of the 1987 STURAA. In most instances the States use their own funds for training. In addition, funds set aside for administration purposes in accordance with Section 104(a) were made available for inspection and training purposes by Section 125, National Bridge Inspection Program, of the 1987 STURAA.

It is estimated that $100 million is spent on bridge inspections annually. In 1986 the States obligated $57 million of HBRRP funds for this purpose.

The FHWA has contracted for the development of supplemental training courses which are available through the National Highway Institute (NHI). The entities putting on these courses must pay a fee for their presentation.

In most instances we have found in our reviews in individual States that inspectors are being properly trained. The States have long recognized the need for classroom training to supplement and broaden the knowledge inspectors receive through on-the-job training. The one area where training could be improved in some instances is with local entity inspectors. In most of these cases the decision has been made to use the local funds for other purposes than training or for employing a fully qualified bridge inspector.

QUESTION:

14. Why do you think problems with the Schoharie bridge were not detected in the most recent inspection?

ANSWER:

A scour problem may not have been detected at the time of the inspection because deep scour at bridges usually occurs during periods of highwater (flooding). Most scour holes will fill in partially or fully after the flood waters have subsided thus leaving nothing unusual around the pier for the inspector to note.

We have done some preliminary testing of radar and sonar equipment to measure scour holes, but use of this equipment is in the experimental stage and is not considered operational.

QUESTION:

15. Is enough research and development being done in the bridge design field to encourage innovation and improved technology? Is there enough funding available for such research? Do competitive bidding procedures inhibit innovation in your view?

ANSWER:

Approximately $10 to $15 million is spent annually on bridge related research which encourages innovation and particularly improved technology. Additional funding would possibly accelerate the advancement of this technology.

Bidding procedures do not inhibit innovation. Rather it is encouraged by alternate designer and contractor options.

AMERICAN ASSOCIATION OF STATE HIGHWAY
AND TRANSPORTATION OFFICIALS

JOHN R. TABB, President
Director
Mississippi State
Highway Department

FRANCIS B. FRANCOIS
Executive Director

STATEMENT FOR THE

WATER RESOURCES, TRANSPORTATION, AND INFRASTRUCTURE SUBCOMMITTEE
OF THE
SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

Relating To

THE COLLAPSE OF THE BRIDGE OVER SCHOHARIE CREEK

by

JACK FREIDENRICH
State Highway Engineer
New Jersey State Department of Transportation

and

Vice-Chairman, Standing Committee on Highways
American Association of State Highway and Transportation Officials

Amsterdam, New York

May 4, 1987

Founded in 1914, AASHTO represents the departments concerned with transportation and highways in the fifty states, the District of Columbia and Puerto Rico, to foster the development, operation and maintenance of an integrated national transportation system. The active members of AASHTO are the duly constituted heads and other chief directing officials of the member transportation and highway agencies.

EXECUTIVE OFFICE: 444 N. Capitol Street, N.W., Suite 225 Washington D.C. 20001 Telephone (202) 624-5800

Mr. Chairman, my name is Jack Freidenrich, and I am the State Highway Engineer for the New Jersey State Department of Transportation. I am also the former Chairman of the AASHTO Highway Subcommittee on Bridges and Structures, and the current Vice-Chairman of the AASHTO Standing Committee on Highways, which is the parent committee of that subcommittee.

With me today is the Executive Director of AASHTO, Francis B. Francois.

Mr. Chairman, we are pleased to appear upon your request, to provide testimony related to the matters in your letter. While we do not have first hand information about the specific incident that gave rise to this hearing, the collapse of the bridge on the Governor Thomas E. Dewey Thruway over the Schoharie Creek, we are pleased to provide some general comments and will respond to any questions to the best of our ability.

The letter requesting our appearance at this hearing was addressed to a number of topics, and accordingly so will be this testimony. Let me begin by discussing AASHTO and its process for the development of voluntary construction and inspection standards that may pertain to the specific incident of the bridge collapse, and related issues.

Development of AASHTO Standards

Among its activities, one role of AASHTO is the development and promulgation of voluntary technical standards guiding the planning, design, construction and operation of highways and their appurtenances, including bridges and structures. The comparison of early highway building and operating experiences in the several states and the establishment of norms and standards through these experiences and through practical related research was, indeed, an important reason for the formation of AASHTO, then called AASHO, back in 1914. This practice of assembling, organizing and then promulgating the continually growing body of knowledge which we term highway engineering continues as one of AASHTO's most strenuous and most vital activities.

Mr. Chairman, it may be helpful for me to briefly review how the Association conducts it voluntary technical standard activity.

The principal origin of our work in the development and refinement of technical highway engineering standards is our subcommittees under the Standing Committee on Highways. Most of these subcommittees consist of the chief official in each of our member departments having responsibility for the subject in question in his or her respective state. In the case of bridges and structures, for example, the Highway Subcommittee on Bridges and Structures consists of the chief bridge engineer in each of the fifty-two member agencies of AASHTO.

Through a system of individual effort, task force activities and requested research, suggested changes, additions and deletions to the several AASHTO published technical documents under the subcommittee's jurisdiction are developed and proposed for consideration. To be adopted by AASHTO, proposed voluntary standards undergo a balloting process.

An affirmative vote by a two-thirds majority of the Subcommittee is required to approve a recommended standard. The approved document is then referred to the Standing Committee on Highways for consideration, and if the Standing Committee approves it will then forward the document to the AASHTO Executive Committee. If the document has the status of a technical policy, after approval by the Executive Committee it is finally taken up by our Policy Committee, which is the supreme committee of AASHTO consisting of the chief administrative officers of the fifty-two member agencies. At all these levels, a two-thirds majority requirement is maintained for approval. The result is a process which thoroughly but deliberately advances the state-of-the-art of highway engineering, maintains a national-level perspective, and recognizes that engineering is simultaneously both an art and a science.

Relevant AASHTO Documents

The documents maintained by AASHTO in the area of bridges and structures include Standard Specifications for Highway Bridges, which is modified and updated each year through an "interim" publication process, Manual for Maintenance Inspection of Bridges, which contains our recommended procedures and frequencies for inspecting the half-million plus bridges in this country for functional adequacy and safety, and some nine or ten lesser standards and guides related to various aspects of highway bridges and structures. With respect to the yearly interim changes to the Standard Specifications for Highway Bridges, AASHTO has delegated the responsibility for approving the annual changes to the Highway Subcommittee on Bridges and Structures, but the two-thirds affirmative vote is still required.

It needs to be noted that AASHTO's voluntary standard and policy documents are not themselves binding upon the states, since the Association has no legal power to this effect. It is up to each individual state to consider the AASHTO recommendations, and take appropriate action thereon. In some instances the AASHTO document is simply adopted by the state, and in other instances the state might use it as the basis for developing its own standard. In the instance of certain major publications, the Federal Highway Administration may go through a rulemaking procedure, based on an AASHTO document. In most cases, the FHWA will review AASHTO documents, and if they find them acceptable will list them as being suitable for use on federal-aid highway projects.

One of the subjects of interest in this bridge collapse is the matter of conducting underwater inspections of bridge structures, and in this area AASHTO has been active.

In 1986, following the procedure outlined earlier, AASHTO adopted a new specification on underwater inspection. A key passage in the adopted change is as follows:

> "Underwater inspection shall be considered for those structures where the depth of water prohibits a visible inspection of the substructure. This will normally be required at intervals not to exceed five years, unless the Inspection Agency has documented data to support intervals greater than this period."

Language was also adopted stating in part,

> "Underwater inspection is the combined effort of sounding to locate the channel bottom, probing to determine deterioration and losses, and/or diving to visually inspect and measure bridge components. It should be an integral part of a bridge inspection plan. Permanently submerged structural, foundation and other components should be inspected when there is reason to believe that a problem exists."

Other changes included special reference to possible corrosion damage on steel or concrete-encased steel piles in brackish or polluted waters.

The Subcommittee on Bridges and Structures met just over a week ago in San Diego, with some 49 member departments in attendance. Among the many items taken up for consideration were additional items relating to the underwater inspection of bridges. Further strengthening of existing language dealing with possible corrosion problems was approved at the San Diego meeting for balloting this fall. This recent activity indicates the concern of our member departments about the conduct of adequate bridge inspections, and our involvement in this area is on a continuing basis.

Bridges in General

Bridges, of course, represent a vital component of any nation's highway system. In the United States, there are more than 500,000 of them on all systems of highways, spanning streams, canyons, marshes, swamps, railroads, other highways and other discontinuities in the earth's surface. They represent a considerable capital expenditure and designers typically use a 50-year life span in their analyses, far more than for any other highway system component. Bridges age, though, and must therefore be inspected at appropriate intervals, repaired when required, and eventually replaced. Circumstances can and do change in such a long time span. For example, the impact of widespread use of chlorides as a welcome winter ice-reducing safety measure on bridge decks was not well understood years ago. Consequently, a major challenge now facing our bridge engineers and engineering researchers is the preservation of the concrete in many older bridge decks in this safer though electrolytically damaging environment.

The Schoharie Creek Bridge

Unfortunately, AASHTO is in no position to comment on the reasons for the collapse of the bridge on the New York Thruway crossing the Schoharie Creek. Other agencies having the resources to investigate the matter, including, we understand, the National Transportation Safety Board, the Federal Highway Administration, the New York Disaster Preparedness Commission, and the Thruway Authority itself, are examining the site and their findings will undoubtedly be assembled and disseminated in due course. Any comments prior to that time would be necessarily speculative and inconclusive.

From our conversations with highway officials in New York, however, we believe that the bridge was constructed in accordance with good practice at that time, and it appears that reasonable inspection procedures and maintenance activities have been followed. What seems evident is that the bridge was impacted by a body of water of unusual volume and velocity, probably well beyond the design standards common when it was constructed.

A word or two on the history of the Thruway and its designation as an Interstate Highway is perhaps in order. Our understanding is that the Thruway originated as an effort of the New York Department of Public Works, predecessor agency to the Department of Transportation, to develop a high-type east-west highway facility through central New York connecting New York City with a number of upstate New York cities, western New York and the rest of the continent in the years after World War II. Slowness of progress and failure to interest the federal government in devoting greater resources to the project led to a decision by the New York Legislature to create the Thruway Authority and to designate the facility as a toll highway. Indeed, we are advised that certain interchanges which had earlier been constructed were obliterated in keeping with the interchange spacing and toll plaza plans associated with the toll-road concept. Geometric design standards were considered to be the highest of the time, in the opinion of the Thruway Authority.

As was the case for most highways constructed in this country and, for that matter, in many other countries as well, the bridges were designed in accordance with the Standard Specifications for Highway Bridges and other standards documents as promulgated by AASHO, AASHTO's predecessor.

Availability of Federal Aid

Mr. Chairman, as you are well aware, the federal-aid highway program is vital to the construction and operation of our national highway system. It contains categories for Interstate construction, Interstate 4R activity, and bridges, and also provides a fund for emergencies. However, it is our understanding that under the federal-aid highway program as now constituted, none of this federal aid is available for use in connection with the reconstruction of the Schoharie Creek bridge, because of its toll authority ownership and current status, even though it is on an Interstate highway.

The Interstate system as we know it today effectively came into being with the passage of the Interstate Highway Act in 1956. Recognizing the existence of, and in some states firm plans for, toll facilities with near-Interstate standards in certain high-volume corridors contained in the Interstate System, there were provisions in the law for signing these facilities as Interstate Highways pending some vague future date when a free facility would be available. Such signing, of course, did not of itself establish the eligibility of such a highway for federal aid. It is our understanding that the Governor Thomas E. Dewey Thruway became an Interstate highway under this provision, even though it was a toll facility and no federal Interstate construction funds were applied to it.

Mr. Chairman, as you well know, the Surface Transportation Assistance Act of 1982 changed the federal-aid relationship somewhat, in that toll facilities such as the Thruway became eligible for Interstate 4-R funding, although not for other federal-aid categories. Under the provisions of the 1982 Act, it is our understanding that some $30 million per year of Interstate 4-R federal aid has been expended on the facility recently. But to our knowledge the problem of the collapsed bridge is not eligible at this time for specific federal funding.

The issue of allowing the use of federal-aid dollars on toll facilities was again reviewed in the just-enacted Surface Transportation and Urban Relocation Assistance Act of 1987, and a few changes were made. However, those changes did not accomplish the goals set by AASHTO policy with respect to toll facilities and the federal-aid highway program. AASHTO policy reads as follows:

> "H-37 State transportation agencies should be permitted to develop toll highways in conjunction with use of federal funds on federally aided projects, as they are now permitted to do with regard to toll bridges and toll tunnels.
>
> H-38 The Secretary of Transportation should be granted the authority to allow the imposition of tolls on federal-aid highways where uniquely high maintenance, construction or reconstruction costs exist. There should be no obligation to repay federal-aid highway funds which may have been expended on the facility."

As is evident, AASHTO favors limited relaxation in the general ban against the use of federal-aid highway funds on toll facilities, but thus far the Congress has not agreed.

Mr. Chairman, before leaving the 1987 Act, we want to express our gratitude to you for your leadership in the 100th Congress toward enactment of this measure. Never before had a federal-aid highway bill been vetoed, and enactment occurred by the narrowest possible margin. Your leadership was clearly critical to that override.

Welcome as the additional federal-aid highway and transit funding provided by the 1987 Act is, Mr. Chairman, AASHTO has pointed out and you well know that it will not be adequate to meet all transportation infrastructure needs. Beyond that, it is clear from the difficulty H.R. 2 encountered that we no longer have that clear consensus on the mission of the federal-aid highway program we had several years ago, when we were in the midst of constructing the Interstate highway system. AASHTO believes we must find a new consensus, and we are setting out on an effort to do so.

The Nation's Transportation Infrastructure

Mr. Chairman, your letter invited testimony on the "broader issue of deterioration of the nation's public works infrastructure and its potential impact on other communities." Our expertise, of course, is limited to transportation infrastructure. With respect to highways, we have built one of the finest highway systems in the world, which over the past decades has become integral to the economy and life style of America. If we do not adequately maintain and rehabilitate the existing highway system, and provide new facilities where they are needed, our economy and life style will clearly be affected in a negative fashion.

The states, and I include your state of New York, Mr. Chairman, and my state of New Jersey, have acted to sharply increase the level of state funding for our highways. Other states have also been acting to increase highway program funding, and many have increased their fuel taxes in recent years. Local governments have also been increasing revenues. But when federal, state and local revenues are added together, we currently still can not assure every citizen that his or her highway infrastructure will not "deteriorate," or that our economy and life style will not be adversely affected.

The federal government in recent years has provided about 25 percent of the total federal-state-local funds expended to construct, maintain and operate our highways, looking nationwide. The requirement to expend revenue on our highways will increase over the next five years, but unfortunately the federal-aid coming from the 1987 Act will be stable for this period; this means that the overall federal contribution will in fact decline significantly below the current 25 percent level by 1991.

Mr. Chairman, AASHTO and the states are concerned about our highway requirements, and how to meet them. We have just started an effort under our Task Force on the Consensus Transportation Program to carefully examine and document our highway requirements to the year 2020, and to develop a program involving the federal, state and local governments to meet those requirements. The effort will take two years, and we are endeavoring to involve all the key public and private sector organizations in a consensus-building process. Mr. Chairman, we want to work in cooperation with your Subcommittee in this endeavor, and hope that the results will be available to the 101st Congress for your consideration.

Summary

Mr. Chairman, we trust this testimony responds to your request, and that it will assist the Subcommittee. Recognizing that you may have specific inquiries beyond the general concerns expressed in your letter, Mr. Francois and I will be pleased to respond to questions, either now or later in writing.

AMERICAN ASSOCIATION OF STATE HIGHWAY
AND TRANSPORTATION OFFICIALS

JOHN R. TABB, President
Director
Mississippi State
Highway Department

FRANCIS B. FRANCOIS
Executive Director

July 9, 1987

Sen. Daniel Patrick Moynihan, Chairman
Subcommittee on Water Resources,
Transportation and Infrastructure
SR-464 Russell Senate Office Building
Washington, D.C. 20510-3201

Dear Senator Moynihan:

Let me first thank you for the kind comments in your letter of June 19 about AASHTO's participation in the Amsterdam, New York hearing you conducted on the collapse of the Schoharie River Bridge. We are pleased to have been able to cooperate with you and the Subcommittee in this effort.

Your letter of June 19 was accompanied by several questions, to which you requested our response. A copy of the 6 questions is attached for your convenience, and our response to each is as follows:

Question 1:

This question apparently refers to my comment that while the Federal Highway Administration's estimate of total bridge needs now exceeds over $50 billion, not all of those needs relate directly to the correction of structural deficiencies that must be made to avoid a bridge failure. With regard to the need for funds related to serious structural problems, I provided a rough estimate of needs in the $30 to $40 billion range.

As to the appropriate federal role in meeting bridge needs, AASHTO policy strongly supports the full utilization of funds available from the Highway Trust Fund, which we believe could support a federal-aid highway program in the range of $15 billion per year; the added funding this would provide beyond the program approved by Congress in April when it overrode the President's veto could substantially increase the $1.630 billion cited in the question. The Association has and continues to support federal assistance for the nation's bridges, and believes there is clearly a national interest in adequately funding the program. In addition, in order to enhance the ability of States to accelerate their program as a result of additional funding provided by Congress, consideration should be given to relaxation of federal and environmental review procedures where bridge rehabilitation and bridge replacement projects are concerned.

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Question 2:

"Structurally deficient" and "functionally obsolete" are technical engineering terms defining specific sets of conditions, and should not be construed as necessarily describing bridges which are unsafe.

A "structurally deficient" bridge has one or more structural (load carrying) elements which, because of age, adverse environment or exposure to heavier-than-anticipated traffic loads and volumes, can no longer accommodate the legally permitted traffic loads within the originally designed safety factors. If the bridge engineer determines that allowing the bridge with the structurally deficient element to remain in service even approaches jeopardizing the public safety, the bridge is normally immediately taken out of service until the deficiency is remedied. Alternatively, the bridge engineer may determine that the public safety is assured by allowing the bridge to remain in service on a load-restricted basis, properly posted, until the deficiency is remedied.

A "functionally obsolete" bridge is generally one which was constructed in an era when the geometric standards (alignment, bridge width, lane widths, horizontal and vertical clearance) were less than current geometric standards. While correction of these functional problems may be desireable, especially if they create danger to traffic, the problems in and of themselves are normally not of the kind that might cause a bridge failure.

With respect to whether there are "clearer terms that might be used instead," we would note that the two stated terms are well established and understood by engineers and others who work regularly with the highway and bridge programs; we would caution that any shift to new terminology might create confusion, unless great care is taken. We have no new terminology to suggest, but will be pleased to respond to any suggestions.

Question 3:

AASHTO strongly supports FHWA's proposed revisions to its National Bridge Inspection Standards as they address bridge inspection intervals. AASHTO firmly believes in an overall sound Bridge Management Program which would include inspection intervals for bridges which are a function of age of bridge, past experience, condition, type and frequency of traffic volume and other relevant factors rather than the presently mandated two year interval for all bridges. The present requirements result in an inefficient, non-cost effective utilization of highly skilled personnel.

Question 4:

The nation's bridges which were designed and constructed 25 to 30 years ago are in generally good condition. Many concrete decks of twenty plus year old bridges in the snow-belt states have deteriorated due to penetration by de-icing chemicals and have had to be replaced.

Current design standards recognize this phenomenon and provide various means of protection which will increase the life span of the deck. Some bridges of that era, such as the Mianus River Bridge, incorporated unique details which require careful monitoring. The site of the Schoharie River Bridge was subjected to unprecedented and unanticipated flood water conditions. Recently adopted new AASHTO specifications emphasize the requirements for regular under water inspections.

Question 5:

AASHTO does not believe that the bridge problem is overstated by FHWA and believes that data supports their figures.

Question 6:

AASHTO is satisfied that innovation and improved technology in the bridge-design field is being well supported by on-going research and development. The Strategic Highway Research Program is a $150 million, five year, highly focused, results oriented research program that is funded under the Surface Transportation and Urban Relocation Assistance Act of 1987. SHRP is supported through a mutual agreement with the Federal Highway Administration, AASHTO and the National Research Council, and one of the SHRP technical areas is Concrete and Structures. In addition, numerous research projects involving many aspects of bridge design and construction are underway, sponsored by AASHTO's National Cooperative Research Program (NCHRP) that is conducted on our behalf by the Transportation Research Board, various segments of the construction and materials industry, and the several state research organizations. It should also be noted that the Association recently published "AASHTO Guidelines for Value Engineering," which is being more widely adopted by the states; value engineering is a function-oriented technique that has proven to be an effective management tool for achieving improved design, construction, and cost-effectiveness in various transportation program elements including bridges.

As to whether "competitive bidding procedures inhibit innovation," we see no necessary reason why this should be the case. This is especially true when the concepts of value engineering are utilized on projects.

We trust these responses will prove useful to the Subcommittee, and stand prepared to provide any further information requested.

Very truly yours,

Francis B. Francois
Executive Director

cc: Jack Freidenrich, New Jersey DOT

FOLLOW-UP QUESTIONS FOR THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

1. Mr. Francois, you testified that there are some $30 billion in bridge needs nationally. What do you think the appropriate Federal role is in trying to meet those needs at a time when only $1.630 billion is available annually for the Bridge Replacement and Rehabilitation program?

2. There is confusion about some of the terminology used to describe deficient bridges. What is the distinction between a structurally deficient and functionally obsolete bridge? Are there clearer terms that might be used instead?

3. What is AASHTO's view on FHWA's proposed revisions to its National Bridge Inspection Standards?

4. The Mianus Bridge in Connecticut was 25 years old when it collapsed in 1983 and the Thruway Bridge in New York was a little over 30 years old. These were obviously not new bridges, but they were not very old bridges either. How serious a bridge problem is there nationwide?

5. Do you think the bridge problem is overstated by FHWA in their estimate that it will take $51.4 billion to make needed repairs to 243,646 deficient bridges. Do you think the data support those figures?

6. Is enough research and development being done in the bridge design field to encourage innovation and improved technology? Is enough funding available for such research? Do competitive bidding procedures inhibit innovation in your view?

DRAFT

TESTIMONY BY DR. DAVID AXELROD

CHAIRMAN, DISASTER PREPAREDNESS COMMISSION

MAY 4, 1987

AMSTERDAM HIGH SCHOOL

SENATOR MOYNIHAN. CONGRESSMAN BOEHLART. GOOD MORNING AND THANK YOU FOR PROVIDING THE STATE OF NEW YORK THE OPPORTUNITY TO DISCUSS THE IMPACT OF ONE OF THE MOST TRAGIC TRANSPORTATION ACCIDENTS OF THE MODERN ERA IN NEW YORK STATE.

MY NAME IS DAVID AXELROD. I AM COMMISSIONER OF HEALTH AND CHAIRMAN OF THE DISASTER PREPAREDNESS COMMISSION, WHICH IS RESPONSIBLE FOR COORDINATING THE STATE RESPONSE TO EMERGENCIES...BOTH NATURAL AND MAN-MADE.

I SAY THIS WAS ONE OF THE MOST TRAGIC MODERN TRANSPORTATION ACCIDENTS IN PART BECAUSE OF ITS ENTIRELY UNEXPECTED NATURE. TEN LIVES WERE LOST OFF A BRIDGE THAT WAS ... BY EVERY AVAILABLE MEASURE ... THOUGHT TO BE PERFECTLY SAFE.

THERE WAS ABSOLUTELY NO WARNING SIGN THAT ANYONE COULD DETECT. AND YET AN APPARENTLY SAFE BRIDGE ON ONE OF THE SAFEST ROAD SYSTEMS IN THE WORLD SUDDENLY COLLAPSED UNDER THE PRESSURE OF A RAGING RIVER.

THE PRIME ISSUE ... OVER THE LONG TERM ... IS HOW TO PREVENT SUCH A DISASTER FROM HAPPENING AGAIN. SPECIFICALLY, ARE THERE TECHNICAL MEASURES AVAILABLE TO US WHICH WOULD ENABLE GOVERNMENT TO DEVELOP AN EXTRA MEASURE OF PROTECTION AND ASSURANCE? ARE THERE BETTER DETECTION SYSTEMS WE SHOULD USE, OR THAT WE SHOULD DEVELOP AS A RESULT OF THIS ACCIDENT?

I KNOW THAT MEMBERS THE SENATE SUBCOMMITTEE MUST SHARE THIS SAME CONCERN.

LET ME FIRST REVIEW SOME OF THE SHORTER-TERM MEASURES THE STATE HAS TAKEN TO COPE WITH THIS TRAGEDY.

SAFETY:

ON APRIL 5TH GOVERNOR CUOMO ORDERED AN IMMEDIATE CHECK OF ALL BRIDGES OVER WATER WHICH MIGHT BE THREATENED BY THE HEAVY FLOODING IN EASTERN NEW YORK. THE TRANSPORTATION DEPARTMENT INSPECTED 356 BRIDGES IN THE 14 AFFECTED COUNTIES. SIX WERE CLOSED, ALL ON LOCAL ROADS IN OR NEAR THE CATSKILLS, THE REGION HARDEST HIT BY THE SEVERE WEATHER. THE THRUWAY AUTHORITY CHECKED ANOTHER 167 BRIDGES WHICH CROSS WATER STATEWIDE, AND FOUND NONE TO BE AT HIGH RISK.

THE STATE ROUTE 161 BRIDGE WHICH COLLAPSED A WEEK AFTER THE THRUWAY TRAGEDY HAD NO ONE ON IT BECAUSE IT WAS CLOSED PRIOR TO APRIL 5th, BECAUSE OF THREATENING WATER IN THE SCHOHARIE.

—INVESTIGATIONS:

THE GOVERNOR AND THRUWAY AUTHORITY IMMEDIATELY SOUGHT INDEPENDENT ENGINEERING ASSISTANCE TO CONDUCT THE STATE'S INVESTIGATION INTO THE COLLAPSE AND TO ASSIST IN DESIGNING TEMPORARY AND PERMANENT REPLACEMENTS. THE CAPABILITY OF THE TRANSPORTATION AND THRUWAY STAFFS IS NOT AT ISSUE. BUT PUBLIC CONFIDENCE DEMANDS AN INDEPENDENT REVIEW BY THE BEST ENGINEERING MINDS AVAILABLE.

SO EVEN BEFORE THE NATIONAL TRANSPORTATION SAFETY BOARD ENTERED THE INVESTIGATION. THE THRUWAY AUTHORITY HAD ENGAGED THE INTERNATIONALLY KNOWN FIRMS OF WISS, JANNEY, ELSTNER ASSOCIATES OF CHICAGO AND MUESER-RUTLEGE OF NEW YORK TO BEGIN THE STATE'S PROBE. SUBSEQUENTLY, THE FIRM OF THORNTON-TOMASETTI OF NEW YORK WAS ENGAGED TO PROVIDE GENERAL OVERSIGHT FOR THE INVESTIGATION, REPORTING DIRECTLY TO ME AT THE DISASTER PREPAREDNESS COMMISSION.

I CAN ASSURE YOU THAT ALL STATE PERSONNEL AND CONSULTANTS ARE SHARING ALL DATA AND INFORMATION WITH THE NATIONAL TRANSPORTATION SAFETY BOARD INVESTIGATORS, AND WILL COOPERATE TO THE FULLEST WITH THAT PROBE.

--LOCAL IMPACT:

ASIDE FROM THE FAMILIES OF THE TEN VICTIMS, THE COLLAPSE HAS FALLEN MOST HEAVILY ON THE CITIZENS OF MONTGOMERY COUNTY, AND PARTICULARLY THOSE IN THE FORT HUNTER AREA. THESE PEOPLE ARE CONFRONTED BY THE SUDDEN REROUTING OF A SUPER-HIGHWAY'S TRAFFIC PAST THEIR FRONT DOORS. AND DISRUPTION IS PROBABLY A RATHER GENTLE WORD FOR THIS EXPERIENCE, WHICH AFFECTS EVERYTHING FROM SCHOOL BUSES TO MILK TRUCKS...FROM AMBULANCE SERVICE TO THE AURIESVILLE SHRINE.

AT THE STATE LEVEL, WE ARE DOING EVERYTHING WE CAN TO EASE THIS BURDEN ON THE LOCAL COMMUNITY. MOST IMPORTANT, WE ARE PRESSING TO GET A DETOUR IN PLACE QUICKLY, TO RELIEVE THE LOCAL ROADS OF THE THRUWAY TRAFFIC. SINCE THAT DETOUR WILL INVOLVE THE USE OF THE ROUTE 5-S BRIDGE OVER THE SCHOHARIE, THE DEPARTMENT OF TRANSPORTATION IS COMMITTED TO RE-OPENING THE ROUTE 161 BRIDGE A FEW MILES TO THE SOUTH BEFORE THE DETOUR IS SET.

OTHER EFFORTS INVOLVE ASSISTANCE TO THE LOCAL VOLUNTEER FIRE COMPANY, TO LOCAL FARMERS, TO THE E-M-S SQUAD, TO THE COUNTY SHERIFF AND TO THE COUNTY EMERGENCY MANAGEMENT OFFICE.

(For your own info as background, you should know that the state is helping the Fort Hunter Volunteer Fire Company with Hazardous Materials training, a new warning/alert system, and a surplus pumper supplied by the Thurway for one dollar. Also, Ag & Mkts is helping some 14 farm families who have their land divided by the Schoharie. We're doing special transport around on the 5-S bridge for them, and are even working on moving one man's silo storage around for him.)

COUNTY SHERIFF RONALD EMERY ... WHO RECEIVED THREE SURPLUS CARS FROM THE THRUWAY FOR ONE DOLLAR ... HAS BEEN VERY HELPFUL IN IDENTIFYING SAFETY AND LOGISTICAL CONCERNS. STATE POLICE AND TRANSPORTATION OFFICIALS ARE CONTINUALLY WORKING WITH THE SHERIFF TO MINIMIZE SAFETY PROBLEMS IN THE COUNTY.

ALL LOCAL OFFICIALS HAVE BEEN EXTRA-ORDINARILY COOPERATIVE AND UNDERSTANDING IN THIS EMERGENCY. IN ADDITION TO SHERIFF EMERY, WE HAVE ENJOYED THE ASSISTANCE OF COUNTY ADMINSTRATOR CHARLES BIGLER, EMERGENCY MANGEMENT DIRECTOR ROBERTA FOX, AND COUNTY BOARD OF SUPERVISORS CHAIRMAN JAMES OTTATI (O-ta-tee), TO NAME A REPRESENTATIVE FEW.

GOVERNOR CUOMO HAS ASKED PRESIDENT REAGAN TO DECLARE THE MONTGOMERY COUNTY AREA ELIGIBLE FOR FEDERAL DISASTER AID, AND I AM SURE YOU GENTLEMAN ARE ANXIOUS AS WE ARE THAT THE REQUEST BE GRANTED. FEDERAL AND STATE ASSESSMENT TEAMS ARE STILL IN THE PROCESS OF EVALUATING THE DAMAGES, SO WE CANNOT QUANTIFY THE LOSSES PRECISELY. OF COURSE THESE LOSSES RELATE NOT JUST TO THE THRUWAY BRIDGE COLLAPSE, BUT TO THE FLOODING THAT CAUSED EVACUATIONS AND WASH-OUTS UP AND DOWN THE SCHOHARIE.

--ECONOMIC IMPACT:

THE ECONOMIC RIPPLE EFFECT OF THE THRUWAY BRIDGE COLLAPSE REMINDS EVERYONE OF WHY THE ERIE CANAL WAS SO IMPORTANT TO THE YOUNG NATION WHEN IT WAS CONSTRUCTED IN THE EARLY 1800's. THE THRUWAY WHICH RUNS ALONGSIDE THE OLD CANAL REPRESENTS A VITAL COMMERCIAL LINK FOR THIS PART OF THE COUNTRY. THE IMPACT OF THIS COLLAPSE IS FELT NOT JUST LOCALLY, NOT JUST IN NEW YORK...BUT ALL AROUND THE REGION.

TO DEMONSTRATE THE IMPORTANCE OF THE REGION, LET ME POINT OUT THAT ELEVEN OF THE NATION"S TOP DOZEN TRUCKING FIRMS HAVE DEPOTS IN THE SYRACUSE AREA.

A SURVEY CONDUCTED BY THE STATE MOTOR TRUCK ASSOCIATION INDICATED THAT FREIGHT COSTS ACROSS UPSTATE NEW YORK WERE UP BY HALF A MILLION DOLLARS PER WEEK, AS A RESULT OF THE THRUWAY BEING SEVERED. THE INABILITY TO RUN TANDEM TRAILERS ON THE DETOUR ROADS IS A MAJOR COST FACTOR. THAT IS A "COST FACTOR" WHICH WILL APPEAR IN THE HOUSEHOLD BUDGETS OF THE ENTIRE NORTHEAST EVENTUALLY. WE ARE TOLD THAT SOME CARRIES HAVE ALREADY FILED FOR RATE ADJUSTMENTS TO COMPENSATE.

THE TOURISM INDUSTRY IS ALSO SERIOUSLY CONCERNED ABOUT THE COLLAPSE, AND SO ARE WE.

THE STATE COMMERCE DEPARTMENT HAS ESTIMATED THAT IF NO DETOUR IS PUT IN PLACE, THE STATE"S ECONOMY STANDS TO LOSE SOME 102 MILION DOLLARS IN TOURIST INCOME. JULY AND AUGUST ARE THE HEAVIEST TOURIST TRAFFIC MONTHS ON THE THRUWAY, SO THAT IS WHERE THE BIGGEST LOSSES WILL COME IF WE ARE NOT ABLE TO BOTH REPAIR THE ROAD AND REPAIR PUBLIC CONFIDENCE AT THE SAME TIME.

A SPECIAL EFFORT IS BEING UNDERTAKEN WITH THE COMMERCE DEPARTMENT TO REACH OUT TO THE TRAVEL AGENTS AND TOUR GROUP ORGANIZERS, AND EXPLAIN THAT SAFE, EFFICIENT TRAVEL ACROSS UPSTATE NEW YORK IS INDEED POSSIBLE THIS SUMMER. THE REGULARLY SCHEDULED SUMMER-SEASON "I LOVE NEW YORK" PROMOTION CAMPAIGN BEGAN SOON AFTER THE BRIDGE COLLAPSE, AND WE WILL MAKE EVERY EFFORT TO BACK-UP THAT CAMPAIGN WITH SOLID ASSURANCES ABOUT UPSTATE TRAVEL.

MONTGOMERY COUNTY IS NOT ONLY AN IMPORTANT TRANSIT REGION FOR THE SOUTHERN ADIRONDACKS. IT HAS ATTRACTIONS OF ITS OWN. ONE OF THE MOST IMPORTANT IS THE AURIESVILLE SHRINE, JUST WEST OF THE COLLAPSE SITE. ALONG WITH THE SHERIFF, WE ARE WORKING TO IDENTIFY THE TOUR BUS OPERATORS WHO BRING GROUPS TO THE SHRINE, AND ADVISE THEM OF EFFICIENT ALTERNATE ROUTES.

AS OTHER SPECIFIC PROBLEMS ARE IDENTIFIED, WE WILL TACKLE THEM IN CONCERT WITH LOCAL OFFICIALS.

PREPAREDNESS.

THOUGH THE INVESTIGATIONS INTO THE COLLAPSE HAVE NOT YET REACHED THE STAGE WHERE ANY CONCLUSION CAN BE STATED, I THINK IT IS IMPORTANT TO DEVOTE A FEW WORDS TO THE OVERALL ISSUE OF PREPAREDNESS. OUR NATION HAS GRADUALLY DEVOTED MORE ATTENTION AND FUNDING TO EMERGENCY PREPAREDNESS IN CERTAIN SPECIFIC SETTINGS -- SUCH AS NUCLEAR POWER PLANTS -- BUT WE DON'T SEEM TO BE TRANSLATING THE LESSONS LEARNED THERE INTO THE BROADER FRAMEWORK, TO EMBRACE NATURAL FORCES WITH THE POTENTIAL TO OVER-POWER US BY TEARING DOWN BRIDGES, AND UPROOTING WHOLE POWER-LINE NETWORKS.

THESE ARE JUST THE TWO MOST RECENT DISASTERS WITH WHICH I AM FAMILIAR HERE IN NEW YORK.

MY POINT IS THAT WE NEED TO BE BETTER COORDINATED AND BETTER PREPARED. WE NEED TO BUILD SYSTEMS THAT ALERT US.

FOR INSTANCE, ON THE FIRST WEEKEND IN APRIL OF 1987, THE NEW YORK POWER AUTHORITY WAS AWARE THAT A VERY LARGE VOLUME OF WATER WAS POWER DOWN THE SCHOHARIE FROM ITS DAM. THE LOCAL SHERIFF WAS NOTIFIED, BUT HOW FAR DID THAT WORD SPREAD? AND WAS IT COORDINATED WITH WARNINGS FROM THE NATIONAL WEATHER SERVICE, WHICH ALSO SAW A HEAVY FLOOD POTENTIAL?

THE THRUWAY AUTHORITY NEVER GOT THE HIGH WATER WARNING FROM THE GILBOA DAM. AND IT USED A DIFFERENT WEATHER SERVICE, WHICH WASN'T SO ALARMED ABOUT THE POTENTIAL PROBLEMS. WE DON'T KNOW THAT THIS MADE ANY DIFFERENCE ON THE FATEFUL WEEKEND. BUT IT SHOWS A LACK OF COORDINATION AND IT SHOWS THE NEED FOR BETTER ANALYSIS AND COMMUNICATION.

CONCLUSION.

WE IN GOVERNMENT MUST RECOVER FROM THIS SCHOHARIE CREEK DISASTER WITH A PROGRAM TO RESIST ITS RECURRENCE. WE NEED TO CAREFULLY EVALUATE OUR ABILITY TO (ONE) IDENTIFY POTENTIAL PROBLEM AREAS OR WEAKNESSES, (TWO) INTEGRATE THAT KNOWLEDGE INTO AN OVERALL VULNERABILITY ANALYSIS, AND (THREE) ASSURE THAT COMMUNICATION SYSTEMS EXIST TO TRANSMIT THIS NEW FOUND DATA TO THOSE WHO NEED IT IN AN EMERGENCY.

THIS IS NOT A MAGIC SOLUTION. WE KNOW OF NO SINGLE... EAST-TO-FIX ... FLAW IN THE SCHOHARIE CREEK BRIDGE TO GIVE US COMFORT. WE MUST LEARN TO PROTECT OURSELVES MORE EFFECTIVELY AGAINST SUCH TOTALLY INCONCEIVABLE TRAGEDIES. IN THAT EFFORT, WE LOOK FOR ASSISTANCE FAR BEYOND NEW YORK'S BORDERS. AND ANY HELP YOU CAN PROVIDE WILL BE GREATLY APPRECIATED.

THANK YOU.

PREPARED
STATEMENT
BY

FRANKLIN E. WHITE
NEW YORK STATE COMMISSIONER OF TRANSPORTATION

BEFORE THE
COMMITTEE ON WATER RESOURCES, TRANSPORTATION
AND INFRASTRUCTURE

SENATOR DANIEL PATRICK MOYNIHAN, CHAIRMAN

COMMITTEE ON PUBLIC WORKS AND THE ENVIRONMENT
OF THE UNITED STATES SENATE

AMSTERDAM, NEW YORK

MAY 4, 1987

SENATOR MOYNIHAN, CONGRESSMAN STRATTON, CONGRESSMAN BOEHLERT, LADIES AND GENTLEMEN.

I AM PLEASED TO HAVE THE OPPORTUNITY TO APPEAR BEFORE YOU TODAY, TO HELP IN ANY WAY THAT THE DEPARTMENT OF TRANSPORTATION CAN IN DETERMINING THE CAUSE OF THE COLLAPSE OF THE THRUWAY BRIDGE AND TO SEEK WAYS TO ALLEVIATE THE DISTRESS THAT COLLAPSE HAS CAUSED.

IN ADDITION TO THE COLLAPSE OF THE THRUWAY BRIDGE, I WOULD ASK YOU TO REMEMBER THAT A FEW HOURS BEFORE THAT TRAGIC EVENT, DOT ENGINEERS CLOSED THE BRIDGE CARRYING ROUTE 161 OVER SCOHARIE CREEK BECAUSE THE FLOODWATERS HAD REACHED THE LOWER LEVEL OF THE TRUSSES.

SIX DAYS LATER, A PORTION OF THAT BRIDGE COLLAPSED. BECAUSE THE BRIDGE HAD BEEN CLOSED AND SECURED, THERE WAS NO LOSS OF LIFE OR PROPERTY, BUT THE ABSENCE OF THE MILL POINT BRIDGE HAS CAUSED ECONOMIC HARDSHIP TO THE AGRICULTURAL COMMUNITY WHICH IT SERVED IN THE AREA AROUND FONDA AND GLEN.

THE COLLAPSE OF THE THRUWAY BRIDGE HAS ALSO CAUSED INCONVENIENCE AND HARDSHIP TO OTHERS, THOSE WHO USE THRUWAY AND THOSE WHO LIVE AND WORK ALONG THE DETOURS.

THE TRUCKERS AND MOTORISTS WHO CUSTOMARILY USE THE THRUWAY, BUT WHO NOW MUST PASS THROUGH THESE COMMUNITIES LOSE TIME AND OFTEN REVENUE AS THEY DO SO.

AS EACH DAY, EACH WEEK PASSES, THERE ARE IMPROVEMENTS FOR THOSE MOTORISTS. MORE ALTERNATE ROUTES ARE ANNOUNCED. THE DETOURS AROUND THE SITE OF THE COLLAPSED THRUWAY BRIDGE ARE MADE SHORTER.

WE ARE ALSO KEENLY AWARE OF THE NUISANCE THAT THE THUNDER OF TRUCKS BRINGS TO THOSE LIVING ALONG ROADS USUALLY FAR LESS TRAVELED. WE ARE AWARE OF THE PROBLEMS SCHOOL BUSES AND FIRE EQUIPMENT ENCOUNTER UNDER THESE CONDITIONS. WE ARE AWARE OF THE ADDED TIME AND ADDED MILES INVOLVED IN DAY-TO-DAY DRIVING AND CONDUCTING BUSINESS.

OUR CITIZENS IN THE AFFECTED COMMUNITIES HAVE BORNE ALL OF THIS WITH PATIENCE, AND I THANK THEM FOR THEIR GOOD HUMOR, COURTESY AND COMMON SENSE.

FORTUNATELY, IN DOING SO, WE KNOW -- AND THEY KNOW -- THAT THE MEASURES TO DATE ARE TEMPORARY. WE

NEED HELP, HOWEVER, IN ACHIEVING PERMANENT SOLUTIONS TO THESE AND ALLIED PROBLEMS.

I SHALL RETURN TO THAT SUBJECT IN A MOMENT.

BUT BEFORE I DO, LET ME SAY SOMETHING ABOUT BRIDGES.

THFRE IS NO QUESTION, I THINK, IN ANYONE'S MIND THAT THE TRAGIC COLLAPSE OF THE THRUWAY BRIDGE HAS CAST DOUBT ON THE INTEGRITY OF ALL OUR BRIDGES. THIS IS A HUMAN REACTION, AND I RECOGNIZE IT AS SUCH.

BUT IF ANYONE THINKS THAT OUR BRIDGES ARE MAINTAINED AND INSPECTED IN A HAPHAZARD MANNER, THAT BELIEF IS A DEEPLY MISTAKEN ONE.

THE DEPARTMENT OF TRANSPORTATION HAS TWO TASKS CONSTANTLY BEFORE IT -- TO MAINTAIN THE LEVEL OF SAFETY OF OUR BRIDGES BY REPAIRING, REHABILITATING THEM OR, WHEN NECESSARY, REPLACING THEM; AND TO INSPECT THEM TO MAKE SURE THEY STAY SAFE.

THE STATE OWNS AND MAINTAINS 7,320 OR 42 PERCENT OF 17,320 BRIDGES IN THE STATE. OF THESE STATE-OWNED BRIDGES, SOME 36 PER CENT ARE RATED AS DEFICIENT, WHICH MEANS THAT THEY ARE IN NEED OF SOME DEGREE OF REPAIR OR REHABILITATION, BUT WHICH DOES NOT MEAN NECESSARILY THAT THEY ARE UNSAFE.

FOR LOCALLY OWNED BRIDGES, THE PICTURE IS NOT BETTER, BUT SOMEWHAT WORSE. MORE THAN HALF OF THESE BRIDGES ARE STRUCTURALLY DEFICIENT.

AGAIN, HOWEVER, LET ME STRESS THAT DEFICIENT DOES NOT MEAN UNSAFE, AND LET ME STATE UNEQUIVOCALLY THAT THE DEPARTMENT OF TRANSPORTATION DOES NOT AND WILL NOT ALLOW TRAFFIC OVER BRIDGES OR HIGHWAYS WHICH IT KNOWS TO BE UNSAFE.

WE ARE JUSTLY, I THINK, PROUD OF OUR BRIDGE INSPECTION PROGRAM, AND, INDEED, THE FEDERAL GOVERNMENT ITSELF HAS COUNTED IT AMONG THE BEST IN THE NATION. BUT WHAT IS GOOD CAN BE MADE BETTER, AND WE ARE DOING JUST THAT.

WE ARE SPENDING AN AVERAGE OF $16 MILLION A YEAR ON THE INSPECTION PROGRAM, USING EVER MORE SOPHISTICATED TECHNIQUES AND EQUIPMENT TO DETERMINE SAFE LOAD LEVELS AND TO MEASURE THE DETERIORATION BROUGHT ABOUT BY USE AND THE PASSAGE OF TIME.

HERE IN MY HAND IS THE STATE'S BRIDGE INSPECTION MANUAL. IT CONTAINS EXACT SPECIFICATIONS UNDER WHICH RATINGS ARE DETERMINED, AND USES PHOTOGRAPHS AND

DIAGRAMS TO SHOW WHAT EACH FACET OF THE INSPECTION SHOULD LOOK FOR AND HOW TO WEIGH IT.

WE USE A COMPUTERIZED WEIGHTING SYSTEM TO DETERMINE WHAT THE MOST ACCURATE RATING IS, WHICH COMPLEMENTS THE JUDGMENT OF THE LICENSED PROFESSIONAL ENGINEER WHO HEADS EACH OF OUR 23 INSPECTION TEAMS.

WE USE STATE-OF-THE-ART EQUIPMENT, SUCH AS THE ARTICULATED "SNOOPER" TRUCKS, WHICH CAN SWING THEIR INSPECTION PLATFORMS AROUND UNDER THE SUPERSTRUCTURE OF A BRIDGE TO GIVE THE ENGINEER-INSPECTORS A CLOSEUP LOOK AT THE UNDERSIDE AND SUPPORT STRUCTURE.

TO LOOK BENEATH THE SURFACE OF THE WATER, OUR ENGINEERS USE A LONG METAL POLE, RATHER LIKE A DENTIST'S EXPLORER PICK, TO DETERMINE THE DEGREE OF WATER SCOUR OR EROSION.

THE SCHEDULE FOR MORE DETAILED UNDERWATER INSPECTIONS, USING DIVERS, IS BEING EXPANDED FROM ITS PRESENT SCHEDULE IN FORCE DOWNSTATE TO BROADEN AND PUT ON A REGULAR BASIS THE CURRENT SELECTIVE INSPECTIONS OF BRIDGES UPSTATE. AS QUICKLY AS WE CAN, WE ARE NEGOTIATING CONTRACTS SO THAT THIS WORK CAN BEGIN SHORTLY.

A WORD HERE ABOUT THE FEDERAL GOVERNMENT'S SUGGESTION THAT BRIDGE INSPECTIONS MAY BE SAFELY PUT ON A LESS FREQUENT SCHEDULE. I WOULD LIKE TO ASSURE YOU, SENATOR MOYNIHAN AND CONGRESSMEN STRATTON AND BOEHLERT, THAT, AS FAR AS WE ARE CONCERNED, OUR PRESENT SCHEDULE OF INSPECTING BRIDGES NO LESS OFTEN THAN EVERY TWO YEARS, AND MORE FREQUENTLY DEPENDING ON AGE AND CONDITION, SEEMS TO US TO BE DESIRABLE AND WORKABLE. WE INTEND TO KEEP TO THAT SCHEDULE.

THE MISSION OF OUR BRIDGE PROGRAM IS NOT MERELY ONE OF SAFETY, HOWEVER. WE MUST SEE TO IT THAT OUR HARD-WON PROGRESS IS NOT HALTED OR EVEN SIGNIFICANTLY SLOWED.

RIGHT NOW, WE ARE FACED WITH A CHALLENGE AND AN OPPORTUNITY FOR OUR FUTURE BRIDGES AND HIGHWAYS PROGRAMS.

THE REBUILDING NEW YORK INITIATIVE HAS PERMITTED US TO TARGET INVESTMENTS ON THE MOST SEVERELY DEFICIENT BRIDGES, SO THAT GROWTH IN THE NUMBER OF DEFICIENT BRIDGES HAS SLOWED DRAMATICALLY.

BUT THE REBUILDING NEW YORK FUNDS WILL BE EXHAUSTED TWO YEARS FROM NOW, AND NEW FUNDS MUST BE FOUND IF OUR GAINS ARE TO CONTINUE.

AS YOU KNOW, GOVERNOR CUOMO ASKED ME LAST JANUARY TO BE CHAIRMAN OF THE ROADWAY IMPROVEMENT COMMITTEE, AND ASKED THE COMMITTEE TO IDENTIFY NEEDS AND RECOMMEND SOLUTIONS.

THE COMMITTEE REPORT, WHICH WAS RELEASED LAST FRIDAY, ESTIMATES THAT MORE THAN $175 MILLION PER YEAR ADDITIONALLY MUST BE SPENT ON STATE BRIDGES TO MAINTAIN 1985 LEVELS IN TERMS OF TOTAL DEFICIENT BRIDGES. THIS WOULD ALLOW US TO ELIMINATE THE MOST SERIOUS DEFICIENCIES AND ADDRESS MOST OF THE BRIDGES WITH LESS SERIOUS DEFICIENCIES.

CONCERNING LOCAL BRIDGES, THE COMMITTEE ESTIMATES THAT ABOUT $60 MILLION MORE ANNUALLY WILL BE REQUIRED TO KEEP THE EXISTING NUMBER OF DEFICIENT BRIDGES AT 1985 LEVELS.

IT SHOULD BE ADDED THAT THE MONEY SPENT TO REPAIR A BRIDGE BEFORE IT BECOMES A SERIOUS PROBLEM IS MUCH LESS THAN THE MONEY SPENT TO REPAIR ONE THAT IS IN WORSE SHAPE.

NOW TO RETURN, IF I MAY, TO THE QUESTION OF THE THRUWAY BRIDGE AND THE MILL POINT BRIDGE.

SENATOR MOYNIHAN AND CONGRESSMEN STRATTON AND BOEHLERT, I WOULD BE REMISS IF I DID NOT ACKNOWLEDGE WITH GRATITUDE YOUR EFFORTS TO DATE TO OBTAIN EMERGENCY RELIEF FUNDS TO REPLACE THIS BRIDGE.

ALL OF US CONNECTED WITH STATE GOVERNMENT AND THIS COMMUNITY KNOW THAT YOU ARE SEEKING EMERGENCY RELIEF FUNDS FROM THE HIGHWAY TRUST FUND, JUST AS SENATOR WEICKER OF CONNECTICUT DID WHEN THE MIANUS RIVER BRIDGE COLLAPSED IN HIS STATE FOUR YEARS AGO.

JUST AS WAS THE CASE IN CONNECTICUT, INSURANCE WILL COVER ONLY A PORTION OF THE COSTS OF DEMOLITION AND RECONSTRUCTION OF THE BRIDGE. IN ADDITION, THERE ARE OTHER CONSIDERABLE EXPENSES -- THE DETOUR OF INTERSTATE TRAFFIC TO LOCAL ROADS AND BRIDGES WHICH WERE NOT DESIGNED TO HANDLE SUCH VOLUMES OR LOADS IS ONLY ONE ITEM.

OTHERS ARE THE TEMPORARY RAMP RECENTLY CONSTRUCTED TO EASE THE TRAFFIC FLOW. THIS IS AN EMERGENCY MEASURE WHICH WE ANTICIPATE WILL BE FOLLOWED SHORTLY WITH A TEMPORARY DETOUR AROUND THE BRIDGE SITE WHILE A REPLACEMENT BRIDGE IS BEING DESIGNED.

THESE EMERGENCY FUNDS, AS WE UNDERSTAND IT IN THE LIGHT OF SENATOR WEICKER'S EFFORTS IN 1983, ARE AVAILABLE EITHER THROUGH AN AMENDMENT TO THE TRANSPORTATION APPROPRIATIONS ACT, NOW IN COMMITTEE, OR THROUGH A BILL WHICH COULD BE SPONSORED BY YOU AND THE SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION AND INFRASTRUCTURE, OF WHICH YOU ARE THE CHAIRMAN.

AGAIN, WE APPLAUD YOUR EFFORTS TO DATE AND WE PLEDGE TO YOU OUR FULL SUPPORT IN RALLYING PUBLIC AND CONGRESSIONAL BACKING FOR EITHER OF THESE PROPOSED MEASURES.

EMERGENCY RELIEF FUNDS ARE ALSO NEEDED TO FINANCE GETTING THE BRIDGE CARRYING ROUTE 161 BACK INTO SERVICE, BUT SECTION 125 OF TITLE 23 NEEDS TO BE AMENDED TO MAKE THE BRIDGE ELIGIBLE FOR FEDERAL AID.

STATE ROUTE 161 IS A MAJOR FACTOR IN THE AGRICULTURAL ECONOMY OF THE AREA.

THEREFORE, WE HAVE RESPECTFULLY REQUESTED THAT YOU CONTINUE YOUR EFFORTS TO OBTAIN THE EMERGENCY RELIEF FUNDS REQUESTED FOR THE THRUWAY BRIDGE, AND ALL THE COSTS ASSOCIATED WITH DETOURS, POLICING, EMERGENCY MEASURES TO PREPARE ALTERNATE ROUTES FOR TRAFFIC, ADDITIONAL COSTS TO THE COMMUNITY AND THE INVESTIGATIONS TO PINPOINT THE CAUSES OF THE COLLAPSE.

IN ADDITION, WE REQUEST THAT YOU INCLUDE IN THE LEGISLATION UNDER CONSIDERATION THE ROUTE 161 BRIDGE, TOGETHER WITH THE COSTS INCURRED FOR TRAFFIC CONTROL AND DETOURS, SO THAT BOTH BRIDGES QUALIFY UNDER SECTION 125 OF TITLE 23, U.S.C.

ALTHOUGH WE ARE NOT YET CERTAIN WHAT THE PRECISE TOTAL COST OF THESE REPLACEMENTS AND THE COSTS ASSOCIATED WITH THE REPLACEMENTS WILL BE, THE COSTS CAN EASILY BE ACCOMMODATED WITHIN THE $100 MILLION AUTHORIZED FOR EMERGENCY RELIEF IN 1987.

WE ARE PLEASED TO ASSIST THE SUBCOMMITTEE, AS WELL AS THE HONORABLE MEMBERS OF THE CONGRESS HERE, IN ANY WAY WE CAN TO IMPROVE FEDERAL AND LOCAL PROGAMS AND THEIR EFFECTIVENESS IN ADDRESSING THE NATION'S CRITICAL BRIDGE AND OTHER INFRASTRUCTURE NEEDS.

THANK YOU FOR YOUR ATTENTION AND THE OPPORTUNITY TO APPEAR HERE, AND I WILL BE PLEASED TO ANSWER ANY QUESTIONS YOU MAY HAVE.

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STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
ALBANY, N.Y. 12232

FRANKLIN E. WHITE
COMMISSIONER

August 20, 1987

The Honorable Daniel Patrick Moynihan
United States Senate
464 Russell Building
First & C Streets, NE
Washington, DC 20510

Dear Senator Moynihan:

Attached are the responses from the New York State Department of Transportation to your follow-up questions subsequent to the hearing in Amsterdam on the Schoharie bridge collapse of the Subcommittee on Water Resources, Transportation and Infrastructure.

We appreciate the opportunity to appear at the hearing and to submit these responses in assistance to the Subcommittee. We look forward to the Subcommittee's report and offer any further assistance you may need in their endeavor.

Sincerely,

John K. Mladinov
Executive Deputy Commissioner

Attachment

FOLLOW-UP QUESTIONS FOR NEW YORK STATE DEPARTMENT OF TRANSPORTATION

1. According to the Federal Highway Administration, the New York State Thruway bridge does not qualify for Emergency Relief funding. However, Interstate 4R funds are available to replace the collapsed bridge. Are you planning to use I-4R funds for this purpose? If not, why not?

   The decision on whether Interstate 4R funds should be used for replacement of the Thruway bridge is the responsibility of the Thruway Authority. Under our 1982 agreement with the Thruway Authority the State Department of Transportation is obliged to make available for use by the Authority any additional Federal aid made available to the State which is attributable to inclusion of the lane-miles and vehicle-miles of travel on the tolled sections of the Thruway in the formula apportionment of Interstate 4R funds. In accordance with this agreement the Authority is allocated about 30 percent of the State's annual apportionment of Interstate 4R funds. However, the Surface Transportation and Uniform Relocation Act of 1987 reduced the Federal aid funds apportioned to New York for resurfacing, restoring, rehabilitating and reconstructing Interstate highways from $102 million in FY 1986 to $89 million in FY 1987. The Thruway's share has been reduced proportionately and all of their limited funds have been committed to needed projects. Although I4R discretionary funds are available, no grants were allocated to New York for 1987.

2. To date, what sources of financial assistance has New York identified for both the Thruway bridge and the bridge that collapsed a few days later on State Route 161? Please give a description of the types and amounts of aid that appear to be available from Federal emergency programs, bridge insurance policies, or any other source.

   The Thruway Authority is responding to this question for the Thruway bridge.

   The Route 161 bridge is eligible for replacement under the Federal Disaster Assistance Program (FDAP) and approval has been obtained from the Federal Emergency Management Agency (FEMA) for funding of the temporary bridge. Funding for the permanent replacement has been denied because FEMA asserts that the temporary structure is adequate. The Department is appealing the FEMA decision. Route 161 is a state route which is not on the Federal-aid highway system. Other potential funding sources are HBRR funds and 100% state funds.

   FDAP funding is also available for the cost of emergency work on Route 161. Some FDAP funding may be available for debris removal and emergency protective measures for Route 5S near the Thruway. The Department is negotiating with FEMA to obtain reimbursement for all eligible costs

3. With respect to the Thruway bridge collapse, what do you estimate to be the costs so far in additional police services, emergency assistance, routing of traffic over alternate routes, and design of a temporary detour? Also, please provide an estimate of these costs for the 90-day period from the date of the accident.

The Thruway Authority is providing you with a tabulation of these costs.

Included in the Thruway tabulation are the following estimated NYSDOT costs through mid-June:

Personal services and equipment	$280,000
Emergency roadway repair (Route 5S)	185,000
Detour construction	368,000
	$833,000

The DOT costs provided above are the most recent available. Cost data is still being processed, and these figures will probably increase when all costs have been compiled.

4. Do you think it is prudent public policy for toll facilities to be ineligible for federal-aid highway funds? Why?

Toll roads like the $2 billion New York State Thruway were constructed before the Interstate program at no cost to the Highway Trust Fund. Over 30 years later, the users of such facilities are still paying for the costs of construction with their tolls. Yet the users of such facilities are not exempted from the Federal excise taxes which support the Highway Trust Fund and must pay these taxes in addition to the tolls. Users of the New York State Thruway have contributed over $500 million in fuel and other excise taxes to the Highway Trust Fund. We strongly believe that motorists such as these are entitled to benefit from their contribution to the Highway Trust Fund and that the toll facility that they happen to be using should be eligible to receive Federal aid. The availability of such supplemental funding will mitigate the increase in costs associated with the operation and maintenance of aging toll facilities, such as the Thruway, and help keep tolls at the lowest possible level. We believe that providing Federal aid for toll facilities would be a prudent and equitable public policy.

5. Please comment on the local opposition to the proposed temporary bypass route. What will the economic and safety impacts be on the homes and businesses in the immediate area? How will adverse impacts be mitigated?

The alternatives which the state faced in establishing a workable, timely detour for the thousands of vehicles which use the Thruway each day were limited, and there was little question that the land to the immediate north of the road would be needed for the temporary route. To the north, two existing spans were available which would be able to carry the traffic involved with only minimal reconstruction or changes; to the south, there was only a wider section of the Schoharie Creek which would have required the building of at least one entirely new structure and a much longer construction time.

As to the safety considerations concerning homes and businesses in the area, we believe that the detour has proven itself to be very safe. There are fixed State Police patrols at each end, and roving patrols in between, which result in slower speeds on the route. Additionally, the removal of all the Thruway traffic from local roads has resulted in roads that are at least as safe as they were before the disaster. In fact, the repaving of several miles of local roads, and additional work on some local bridges, actually result in somewhat safer area conditions than were evident before.

Expiditous restoration of Route 5S and strengthening of the roadway for use as a detour for Thruway traffic got traffic off the local roads, increased safety and minimized interruptions to commerce and inconvenience to the traveling public. Rapid replacement of the fallen Route 161 bridge went a long way toward assuring continued timely travel for local business and commerce, and although local travel will take a bit longer in the area around the fallen Thruway span during the life of the detour, we still anticipate a return to normal after six months.

As to the negative economic effects, we believe there are very few. Except for one roadside farm stand and one restaurant, we do not believe there will be any substantial effects on area businesses or industry as a result of the detour. Attempts on the part of the Thruway Authority to mitigate the effects of the disaster and resultant bypass of these two businesses are ongoing, but in one case have been rebuffed. Court action was undertaken some time ago, and will likely continue according to recent reports.

6. Now that New York has been declared eligible for Federal disaster assistance, will aid under that program be available for Schoharie bridge-related costs?

   Federal Disaster Assistance is available for the Route 161 bridge. We understand from the Thruway Authority that some FDAP funding may be available for costs related to the Thruway bridge collapse.

7. What will the cost be for replacement of the Thruway bridge?

   The Thruway Authority estimates that the cost of the new bridge, including site survey, design, construction and inspection will be $16,035,000.

8. Please comment on the present formulas and factors used for distributing Federal-aid highway funds. Do you think they accurately reflect current needs? What changes, if any, would you recommend for consideration in the future?

We believe that the formulas used to apportion the various categories of federal aid should reflect the relative needs of each state for each category of Federal aid. The factors used in the present formulas do not result in a distribution which accurately reflects the relative needs of the states. We are particularly concerned with the distribution of funds resulting from the formulas used to apportion Highway Bridge Replacement and Rehabilitation funds and Interstate 4R funds.

Highway Bridge Replacement and Rehabilitation funds are apportioned on the basis of a formula which reflects the relative costs of needed replacement and rehabilitation of deficient bridges in each state. New York has a backlog of about $4 billion in deficient bridges based on the National Inventory of Deficient Bridges compiled by FHWA for 1986. This represents 18.1 percent of the FHWA-inventoried national needs. However, the present law limits the apportionment of bridge funds to any state to only 10 percent of the amount authorized for apportionment. As a consequence, New York's apportionment was over $120 million less than would be warranted by relative needs. All of the other states share this bonus derived at New York's expense. New York is the only state affected by this limitation, and the Bridge Program is the only categorical highway program subject to an arbitrary maximum apportionment limitation. Under the reduced apportionments for Highway Bridge Replacement and Rehabilitation funds contained in the Surface Transportation and Uniform Relocation Assistance Act of 1987, the funding available to New York resulting from the combination of the reduction in program and the maximum limit on the amount available to any state will make it impossible for New York to replace or rehabilitate bridges at a rate which would ever allow it to catch up to the condition of bridges which prevail in the rest of the nation.

To partially offset the loss of funds to which New York would be entitled to receive based upon relative needs, we would increase the maximum limitation from 10 to 12 percent, or eliminate the arbitrary maximum limitation entirely. The impact on apportionments to other states of such action would be limited to reducing those apportionments by about two percent.

In addition to the inequity of the formula used to distribute bridge funds, the formula used to apportion funds for the resurfacing, restoration, rehabilitation and reconstruction of the Interstate System does not result in a distribution which adequately reflects the relative needs of each state. This formula considers only the lane-miles of Interstate highway in each state and the vehicle-miles of travel on such highways in apportioning such funds. No consideration is given to the relative age of the Interstate highways in each state, the effects of harsh weather upon the need to repair highways or the impact of heavy truck traffic on highway conditions. Further, it does not give any consideration to the disproportionate backlog of 4R needs in some states resulting to some extent from the historically inequitable allocation of federal aid, and the substantial differences in cost between rehabilitation of a mile of Interstate highway in rural areas and those in densely developed urban areas.

A study mandated by Congress in the Surface Transportation Assistance Act of 1982 to examine possible changes to the I-4R formula was inconclusive. However, the report recommended that "more comprehensive studies on these issues should be undertaken now." We strongly support this recommendation and urge the completion of needed additional studies as soon as possible.

9. What is your view of the changes FHWA has proposed for the bridge inspection program? Do you think these changes will strengthen or weaken existing inspection standards?

The Department's comments in response to the Notice of Proposed Rulemaking Relating to National Bridge Inspection Standards; Frequency of Inspection and Inventory, as published in the April 7, 1987 Federal Register are as follows:

"We do not object to FHWA's proposed modification to the current requirements for a maximum bridge inspection interval of two years, under certain approved conditions. This option proposed to be available to the states is intended to make it possible to concentrate state inspection resources on those structures whose type or condition warrant increased inspection frequencies. New York State might not choose to exercise such an option since the State has a very large, old bridge population, which faces some of the most severe environmental conditions in the country, requiring the frequent use of road de-icing salts. Many of our bridges are stream crossings that frequently must endure ice and heavy spring runoffs, exposing them to repeated high stream levels and potential embankment and stream bed erosion or scour. Under these conditions we would not be comfortable increasing the maximum interval between inspections.

We do recognize that conditions in other states may be sufficiently different to justify an increase in the inspection interval. Likewise, there may be certain types of bridges which are less susceptible to deterioration to justify an increased inspection interval. An example may be grade separation structures of recent design, which are not subject to foundation erosion. The potential candidates for lengthened inspection intervals would tend to be those that are newer, easiest to inspect, have redundant structural members and are not exposed to hostile environmental influences. However, potential savings from increased intervals between inspections would be offset to some extent by the need for an increased inspection intensity when an inspection is made.

Categorizing bridges by inspection frequency and having variable inspection crew scheduling from year to year would be an added administrative complexity and burden, which also would offset to some extent any savings that might result from longer inspection intervals.

New York State already implements variable bridge inspection intervals within the two-year maximum inspection interval. An annual interval, or even less, is applied to bridges whose conditions warrant more frequent inspections to monitor bridge condition and rates of deterioration. In general, all bridges with low condition ratings, all load posted bridges, and bridges "flagged" for having serious structural deficiencies are inspected at no longer than one-year intervals.

With regard to the suggested five year underwater diver inspection interval, it would be advantageous to have inspection intervals of multiples of two years, for better integration of scheduling with the standard two year inspection cycle. This suggests that the maximum interval for diver inspection be four or six years, unless the bridge foundation types and conditions make more frequent inspections advisable. Having a variable cycle for underwater diver inspections, depending on the particular bridge and its design, condition and environment is in line with the philosophy being proposed for general inspections, and also parallels New York State's philosophy for setting inspection intervals. Diver inspections are appropriate candidates for variable frequencies. Reduced intervals should be determined by the findings and recommendations of the inspecting engineer, although certain general criteria for reduced intervals could be established, such as bridges with low underwater inspection ratings and stream bridges on spread footings."

10. The Office of Inspector General of the U.S. Department of Transportation issued a Report on the Audit of Quality of Bridge Inspections for Region 1 on May 15, 1987. Please comment on their findings and recommendations regarding New York.

Attached is a February 12, 1987 memo from D. Egan, NYSDOT, to V. E. Taylor, FHWA, which was in response to the findings of the draft report. This outlines our plan to achieve National Bridge Inspection Standards (NBIS) compliance in the area of load rating and postings, and this plan is now underway. The plan as stated has been modified by the fact that we intend to use additional in-house staff for non-State ratings in lieu of a new consultant manpower agreement. We have been working with FHWA on a system of monitoring progress.

We have recently reviewed the final OIG report and are preparing a formal response. We cannot offer any major disagreements with the report findings, and our comments will be an update of what was made in response to the draft report.

We will have some minor comments on interpretation of some data in the report, and we have had informal discussions with FHWA on these details. Our objections to the OIG findings on inspection frequency and underwater inspection that we noted in the February 12 memo are still valid.

In summary (1) the report findings regarding New York are essentially correct, (2) we have taken positive actions to address identified issues in a reasonable timeframe and (3) we are cooperating with FHWA in acting on the report recommendations.

11. What is your view on continuing tolls on the Thruway? If tolls are ended, what will be the economic and transportation impacts of combining the Thruway with the existing system?

We anticipate that the Legislature and the Governor will remove the tolls from the Thruway in 1996 and we have initiated the planning needed to effect a smooth transition from a tolled to a free facility. The removal of tolls will be reflected in decreasing costs of transportation in the corridor for both passenger and commercial services. To the extent that a reduction in the cost of shipping through the corridor will stimulate the economy we can expect the removal of tolls to have a positive impact upon the State's economy.

However, the removal of tolls and conversion of the Thruway to toll-free operation will also require a substantial capital investment. While the Thruway Authority has been able to maintain the Thruway in relatively good condition, as the system ages (in 1996 it will be over 40 years old) capital rehabilitation requirements will grow. In addition, 62 toll barriers have to be removed and segments on which toll barriers have been located will have to undergo modifications to more effeciently handle traffic which is no longer required to be routed through a toll collection facility. The change from a toll to a non-toll facility will also lead to greater traffic demands on the system which may require additional capacity and more interchanges.

It is intended that the costs resulting from changes such as these shall be identified and fully addressed in an in-depth study of the issues which must be considered and resolved in making the transition to a State operated toll-free Thruway in 1996.

12. What is involved in transferring the Thruway from the Thruway Authority to the New York State DOT, and what period of time will be needed for an orderly transition? What State legislation will be required?

Under present State law, the Thruway Authority retains jurisdiction over the Thruway as long as notes, bonds or other obligations remain outstanding and the Authority's existance is not terminated by law. Consequently, action by the Legislature will be required to transfer the Thruway from the Authority to the State Department of Transportation. Planning has been initiated to effect such a transfer in an orderly transition and all needed action will be taken in a timely manner.

13. How many New York State bridges are either closed or posted at present? What percentage of the total number of bridges in the State does that represent? Are all the bridges closed by heavy flooding in early April now open to traffic?

The following are the numbers of posted and closed bridges as of mid-April 1987, when our bridge inventory data file was last updated and the data sent to FHWA in accordance with Federal requirements.

	State Owned	Non State Owned	Total
Total Highway Bridges	7050	10315	17365
Posted Bridges	94 (1.3%)	1597 (15.5%)	1691 (9.7%)
Closed Bridges	8 (0.1%)	113 (1.1%)	121 (0.7%)

An undetermined number of bridges which were closed by heavy flooding in early April remain closed.

14. Please comment on funding and training for the bridge inspection program. Is enough money available, and are inspectors being properly trained?

New York State Department of Transportation places strong emphasis on training in its bridge inspection program. The Department has developed its own training course, which includes both classroom and field work. This course is given to all State employee bridge inspectors, quality control engineers, Region Office Structures Engineers, as well as to all consulting engineers participating in the inspection program. A number of Thruway Authority and FHWA personnel have also attended the course. Our inspector training is supplemented by conducting special training courses offered by others, whenever possible, such as the FHWA Fracture Critical Member inspection course and Culvert inspection course. In conjunction with the courses, New York State has developed its own Bridge Inspection Manual, which gives a detailed description of the inspection rating system with numerous examples. The manual is supplemented by a number of Technical Advisories which describe specific inspection procedures and requirements. State inspectors are also issued various Federal and AASHTO publications which are required reference tools of each inspector.

New York State Department of Transportation also requires inspection qualifications that are more stringent than those recommended by the National Bridge Inspection Standards (NBIS) to help assure inspection quality. All field inspection team leaders and office quality control engineers must have a valid New York Professional Engineer license plus 3 years of bridge inspection experience.

In regard to funding, there is always a desire, and sometimes pressure, to improve inspection quality, and there is always a limited amount of resources available. Quality inspections are not cheap, as there are few short cuts to physically accessing the components of a bridge, performing systematic inspections and documenting the findings in a systematic, comprehensive manner. Up to now sufficient money has been made available to provide for the inspection quality and frequency we now have, and FHWA has cooperated with our efforts under the HBRR program. We hope Federal funding cooperation will continue, but are concerned that some more recent policy changes or proposals, that can be perceived as a reduction in inspection standards, are fiscally rather than technically motivated. An example is the Notice of Proposed Rulemaking which is discussed in Question #9 above. In addition, FHWA has stopped allowing federal reimbursement for consultants attending our inspector training courses, which we feel is contrary to the spirit of the NBIS requirements that inspectors have proper training.

15. Why do you think problems with the Schoharie Bridge were not detected in the most recent inspection?

Any answer would be speculation on our part, since the bridge was inspected by the Thruway Authority. The latest (4/1/86) inspection report that we received from the Thruway showed that the pier footings and adjacent erosion/scour conditions were rated as unknown for two piers, presumably due to deep water, making them inaccessible. This presumption is based on the fact that the Thruway Authority scheduled this bridge for a diving inspection under our 1987 Eastern Diving Inspection consulting agreement. One could also speculate whether any inspection of the pier bases previous to the April 1987 flood, whether performed in very low water or by diving inspection, would have discovered any serious damage, or would have suggested failure occurring during a major flood.

16. In your view, should bridges susceptible to scouring be closed automatically during periods of record flood levels?

All stream bridges are susceptible to scour, but a relatively few bridges are susceptible to collapse due to excessive scour. Collapse susceptibility varies greatly depending on the type of bridge construction. We define excessive scour as that which would cause the bridge substructure foundation to fail and result in large settlement, tilting, movement, or structural failure of the bridge substructure unit.

17. Does New York State DOT conduct underwater bridge inspections? If so, was an underwater inspection done of the Schoharie bridge? How valuable are underwater bridge inspections? Please comment on the underwater inspection requirement proposed by FHWA in its April 7, 1987 notice.

The Department conducts underwater inspections for the more than 12,000 highway bridges spanning rivers, lakes and streams in the State. In most cases low water levels allow the underwater portions of the substructure and adjacent stream bottom to be accessed by foot or small boat, and the inspection consists of visual observations, probings and stream bottom soundings. In deeper water, diving inspections are conducted. The Department has conducted diving inspections on 80 bridges between 1983 and 1986, and on 45 bridges in early 1987. Nearly all these in the New York City and Long Island areas.

A 1987 diving inspection program for about 600 upstate bridges is underway. The Schoharie Bridge was scheduled for a diving inspection as part of this program. No previous underwater diving inspection of the Schoharie bridge has been conducted.

The leading cause of bridge failure are those attributed to hydraulic reasons, including flood and ice damage, scour and erosion. Underwater substructures are also susceptible to deterioration due to reasons other than erosion. Salt water in particular can accelerate deterioration of steel and concrete, and all timber components are susceptible to rot at the water line and attack by marine organisms. Underwater inspections are therefore needed to both assess the integrity of the structure itself and evaluate conditions of the supporting foundation material.

Our comments on the underwater inspection requirement proposed by FHWA are given in our response to Question #9 above.

18. New York State recently passed legislation allowing trucks to exceed Federal weight limits. Please comment on the effects the heavier trucks have on the State's bridges and highways. How much of the road and bridge system has been designed to accommodate these heavier vehicles?

In 1985, New York State passed legislation that provided for a comprehensive truck weight permit and enforcement program. The legislation authorized the issuance of annual vehicle permits to exceed State and Federal axle and gross weight limitations. The weight law modifications were designed to deter the operation of severely overweight vehicles and thereby reduce the damage caused by these vehicles to the highways and bridges of New York State. These amendments also installed a heavier fine schedule and penalty provisions which now make it uneconomical for the trucking industry to continue its practice of vehicle overloading. The end result is a balanced solution that permits reasonable, regulated overloads.

The basic permit types allow operation without route restriction at 125% of legal load. Since dead load (structure weight) stresses remain constant, this increase in live load results in approximately a 10% increase in total stress on a bridge. Structures designed to Interstate standards (HS20 loading) are able to withstand this level of loading almost indefinitely. Almost all structures put into State service since 1950 are HS20 design.

An additional permit may be obtained which allows more than a 25% increase in live load ("R" Permit). Approximately 10% of State bridges have been signed with "No R Permit Loads."

Two years of permit operation has changed very little insofar as infrastructure deterioration is concerned. The State system does not appear to be adversely affected, considering the relative magnitude of change in loadings over a short period of time. A significant amount of spot damage may be occurring on the local system due to re-routing of traffic due to construction. While the State restricts movement of permit loads over unsuitable structures, localities generally do not.

The 1985 Legislation has charged the Permanent Advisory Committee on Truck Weights to prepare a report to the Governor and the Legislature which examines the relative costs and benefits in increased road capacity for the bridges and highways of the State, new development in the design of trucks, their operational safety and economics, the manner in which they affect the safety of the traveling public, the useful life of bridges and highways, the protection of the highways and such other matters that would affect the use, operation and maintenance of the highways of the State. The report is due in January, 1988.

19. How does New York State prioritize its bridge projects?

Proposed bridge projects are prioritized for inclusion in the Department's capital program based primarily on the condition rating of the bridge and the traffic volume it carries. Condition Rating is a weighted average of ratings, from 1.000 thru 7.000 of thirteen key components evaluated during inspection. The Condition Rating is a measure of the bridge's ability to function structurally as compared to how it was intended to function when newly constructed. A bridge is "deficient" if it has an inspection Condition Rating of less than 5.000 on our inspection rating scale. Traffic volume is measured in Annual Average Daily Traffic (AADT).

The Department uses the following guidelines to evaluate project initiation requests for proposed projects for State owned highway bridges and for non-State owned highway bridges:

1. Existing bridges with a Condition Rating of less than 3.000 will be given a high priority even if traffic volume is extremely low. For bridges in this severely deficient condition, the traffic threshold is zero. Routine economic analysis will

generally be sufficient for approval for the capital program; no supplemental justification will generally be required.

2. Existing bridges with a Condition Rating of from 3.000 through 3.999 will require supplemental justification beyond the routine economic analysis if the projected traffic volume is less than 4,000 AADT.

3. Existing bridges with a Condition Rating of more than 4.000 will require supplemental justification even if traffic volume is extremely high. Routine economic analysis must be supplemented before the project will be approved for the capital program.

For projects that require supplemental justification, the Department's Regional Offices provide evaluation of their selection of such projects against the postponement of work on other bridges that do not require supplemental justification. This recognizes that for every bridge that is programmed which does not meet the criteria, there will be another bridge that cannot be programmed which does meet the criteria.

William C. Hennessy
[redacted]
CHAIRMAN
Genevieve M. Starosciak
[redacted]
VICE CHAIRMAN

CHARLES T. LANIGAN
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ALEXANDER A. LEVINE
EXECUTIVE DIRECTOR

July 30, 1987

Daniel Patrick Moynihan
Chairman
Subcommittee on Water
 Resources, Transportation,
 and Infrastructure
United States Senate
Washington, D.C. 20510-6175

Dear Senator Moynihan:

I have prepared responses to your written questions concerning the implications of the Schoharie Creek bridge collapse as requested by your letter of June 19. The responses are numbered to correspond to your questions:

1. The Authority is not planning to use I-4R funds to replace the Schoharie Creek Bridge. Our anticipated share of I-4R Federal funds has been earmarked, to provide in part, for future major Thruway maintenance projects totaling $1.7 billion and covering the period 1987 - 1996. Therefore, it is important that the Authority receive additional Federal funding for the Schoharie Bridge project.

2. The bridge property damage insurance policy contains an estimate of $8,801,000 to replace the Schoharie Bridge. However, the replacement bridge will include betterments which may not be covered by insurance. In addition, extraordinary debris removal costs are being incurred in an attempt to determine the cause of the collapse. The need to replace the bridge quickly, due to its importance in being a vital link in the interstate transportation system, will also add to the final replacement cost.

We also have loss of revenue insurance that provides for reimbursement of costs attributable to restoring traffic to the Thruway. Depending on our loss of revenue, the approximate $7.9 million cost of temporary detours could be reimbursed in total.

If your proposed legislation does not pass, the Authority will only be eligible for limited Federal Disaster Assistance under the Disaster Relief Act of 1974, Public Law 93-288. This assistance is administered by the Federal Emergency Management Agency (FEMA). FEMA has made a preliminary determination that only the emergency protective measures taken during the period April 5 - May 13, 1987 are eligible. These measures are limited to search and recovery operations, securing the bridge site, and detouring traffic off the Thruway. Costs for debris removal, construction of temporary detours and replacement of the bridge are not eligible for reimbursement.

FEMA Representatives have reviewed our records and estimate that approximately $612,000 of our emergency protective measure costs are eligible. Of this amount, the maximum federal reimbursement would be 75 percent or $460,000.

3. & 10. The enclosed schedule summarizes the cost of the Schoharie Bridge collapse to the Authority.

4. The Schoharie Creek Bridge is insured under an Inland Marine property damage policy which provides for reimbursement of the replacement cost of the original bridge. The bridge was insured for 100 percent of its replacement value as estimated by our engineering consultant. Two factors; the extremely high cost of debris removal and the need to reflect current bridge construction methods, will most likely result in expenses exceeding the insurance recovery.

Loss of toll revenues, up to $156 million, is covered under a Use and Occupancy Policy during the period of bridge reconstruction. There is a seven day deductible. The policy also provides for reimbursement of costs attributable to restoring traffic to the Thruway.

5. The following is a breakdown of revenues and their uses for the last complete fiscal year:

	1986 Actual (Millions)
Total Toll Revenues	$196.8
Total Overall Revenues*	220.7
Total Departmental Operating Exp.	111.5
Total Extraordinary Expenses	7.6
Allocations to Reserve Funds for:	
Major Rehabilitation of roadway and bridges	49.7
Equipment Replacement	6.0
Debt Service	41.9
Advanced Bond Retirements, Cash Adj. And Retained Funds	4.1
Total Routine Maintenance Costs Included in Oper. Expenses Above	50.0

In addition to the routine maintenance cost of $50 million, noted above, the Authority spent $77.3 million from funds previously allocated to its Major Rehabilitation Reserve and $26.3 million in 4R funds on major roadway and bridge rehabilitation projects.

* Includes toll, concessionaire, interest and miscellaneous revenues.

6. It appears prudent to consider the use of federal, state and local funds in combination with toll revenues as a possible solution to the current financial crisis that this and many other states are facing in dealing with their transportation infrastructure rebuilding programs.

7. The Thruway maintains the following funded accounts that are available for contingencies:

Insurance Fund: There is $2.5 million within this fund that could be applied to the reconstruction of damaged or destroyed bridges or sections of highway if insurance proceeds and other funds available are insufficient.

Reserve for Public Liability
Claims and Indemnities: There is $7 million within this reserve for potential liability claims against the Thruway.

In addition to these contingency accounts, the Thruway maintains operating reserves for major highway and bridge rehabilitation projects and equipment replacement. (See Item 5).

8. The Authority does not have a specific study of the effects of larger and heavier trucks on its system. However, a national body of knowledge is being developed by others and can eventually be extrapolated to apply to the Thruway system. While we have not quantified the effects of truck weights and economic issues ourselves, it is our belief that increased volumes of larger and heavier trucks damage the existing pavements and structures in proportion to their overall axle weights. Therefore, the Thruway Toll Schedule charges trucks a larger amount than passenger cars.

9. The Authority proposed a one lane/two way, limited service roadway tie between the Fort Hunter and Auriesville communities on the same structure expected to carry the westbound Thruway detour. The State Department of Transportation felt that the safety tradeoffs, such as the resultant narrowed Thruway roadway on a structure, could not be offset by the benefits derived. Economic impact appears to be very localized. Adequate public road detours are available in the affected area at the cost of a few minutes per trip. Through traffic on state Route 5S between Amsterdam and Fultonville has been rerouted to the Thruway and no toll will be collected for these local trips. Also, there are two other nearby routes that can be used as local trip detours. Special signing is being developed to assist with identification of local businesses located on the bypassed legs of original Route 5S. Coordination of community emergency services with Thruway patrols and the use of access gates has been implemented on a local basis. To further insure for the public's safety, the New York State Thruway Authority provided an additional fire vehicle (pumper) to the Fort Hunter Fire Company.

Objections by a local property owner, whose land was obtained for the temporary bypass construction, and the Town of Glen have been handled through the courts. While it is most unfortunate to disturb even a small amount of good farmland, the overwhelming interest of the public required the timely construction of the bypass to alleviate traffic condition on the state route detours and relieve the several communities through which the detour passed. The temporary Thruway bypass does not materially affect the flood plain. The Authority will utilize the assistance of Cornell University and make every reasonable effort to restore the disturbed farmland when it is returned to the owner's use. All nine property interests will be fully compensated to the fullest extent of the state's eminent domain procedure law for the three-year temporary easements now in place.

11. Bridge inspection activities have been accelerated through the use of additional resources and interim inspections of bridges over waterways. Underwater inspections by divers of all bridge elements that cannot be observed through normal access are presently underway.

The Authority is working with the State Emergency Management Office to provide us with severe weather and/or rainfall information both locally and within the watershed area of every flood-prone location. They are also transmitting written notice to the Thruway Communications Center. The State Warning Point (SWP) notification process executed by SEMO will now also include the Thruway. State Department of Transportation rainfall and weather reports are now being given to State Police Troop T. The "Procedure for Handling Storms, Toxic Spills and Natural Disasters" is being updated for specific response to flooding in the Schoharie Creek area as it affects the temporary Thruway bypass on the Route 5S bridge.

12. The New York State Thruway Authority and the State Disaster Preparedness Commission (DPC) have assembled a group of expert consultants to fully evaluate the design, inspection and maintenance of the bridge, and the hydrologic conditions that existed at the time of the collapse. The goal is to identify the probable cause of the collapse and contributing factors. This investigation is still underway.

The state investigation involves:

A.	Thornton-Tomasetti, P.C. Engineers and Designers 641 Avenue of the Americas	-overall technical coordination -reviewing work of other consultants -liaison with State Agencies -review all technical reports
B.	Wiss, Janney, Elstner Associates, Inc. Consulting And Research Engineers 330 Pfingster Rd.	-review of documentation -identification, location and examination of structural components -demolition and removal of structural components -structural evaluations -assessment of cause
C.	Meuser-Rutledge Consulting Engineers 708 Third Avenue New York, NY 10017	-review of documentation -examination of pier foundations -soil borings and sampling -geotechnical analysis -assessment of cause

A technical committee of the DPC consists of representatives of DOT, the Thruway Authority, the State Geologist and the Department of Environmental Conservation. This committee acts as a sounding board for the consultants and provides State assistance as necessary.

A preliminary report has been issued by Wiss, Janney, Elstner, dated June 15, 1987. Their final report is scheduled for mid-August. The Disaster Preparedness Commission issued an interim report dated May 27, 1987. Copies of these reports are enclosed.

Their preliminary findings indicate that the collapse was triggered by movement of pier 3 where the embedment of its pier foundation and erosion protection may not have been sufficient to preclude loss of underlying support under the extreme flow conditions that existed on April 5.

The National Transportation Safety Board, which is also investigating the accident, conducted hearings in Albany during the week of June 29. It is our understanding they will ultimately issue a final report concerning probable cause and prevention of future incidents somewhere near the end of the year.

13. The New York State Thruway Authority Act, which was passed by the State Legislature, requires the corporate existence of the Thruway Authority as long as bonds are outstanding and until its existence is terminated by law. Final principal payments on Thruway bonds are scheduled on July 1, 1996. A copy of the 1982 Agreement between the Federal Highway Administration, the New York State Department of Transportation, and the Authority is enclosed.

A task force consisting of the Department of Transportation, Division of the Budget and the New York State Thruway Authority has been working for over a year to identify and resolve transition problems in anticipation of the Legislature's decision.

Thank you for the opportunity to present this material to you. Please do not hesitate to contact us if additional explanation or information is required.

Sincerely,

Executive Director

Enclosures

Estimated Cost of the Schoharie Bridge Collapse
Before Insurance and Federal Assistance
New York State Thruway Authority

	**** April 5, 1987 thru		****	
	July 4 , 1987		May 31, 1988	
Personal Services				
Twy Maint Forces	$ 550,000		$ 900,000	
Toll Collection	140,000		140,000	
Admin Hqtrs Personnel	300,000		440,000	
State Police - Troop T	700,000		1,250,000	
- All other	400,000		400,000	
DOT	400,000		500,000	
		$2,490,000		$3,630,000
Equipment and Materials				
Equipment Usage	300,000		350,000	
Stock Issues	55,000		60,000	
Direct Charges (vouchers)	250,000		300,000	
Signs - special	20,000		20,000	
		625,000		730,000
Contracts				
Temporary Detours				
Interchange 27A	450,000		450,000	
Design	290,000		290,000	
Land Acquisition	65,000		65,000	
Site Survey	100,000		100,000	
Construct Detour Ramps	6,300,000		6,300,000	
Decking on RR Bridge	270,000		270,000	
Repairs to 5s Bridge	150,000		150,000	
Inspection	275,000		275,000	
Detour Removal			2,500,000	
		7,900,000		10,400,000
Clean-up				
Debris Removal	3,000,000		3,000,000	
Forensic Study	800,000		800,000	
Coordination and Inspection	375,000		375,000	
		4,175,000		4,175,000
New Bridge				
Site Survey	50,000		50,000	
Design	370,000		370,000	
Engineering Support	165,000		165,000	
Fabricate Steel			2,900,000	
Construct Bridge			11,300,000	
Inspection			1,250,000	
		585,000		16,035,000
Loss of Revenue (7 day deductible)		350,000		350,000
Total		$16,125,000		$35,320,000

Department of Finance and Accounts
Bureau of Fiscal Audit - July 6, 1987

AGREEMENT

THIS AGREEMENT, made this 19th day of July, 1982 by and among the NEW YORK STATE THRUWAY AUTHORITY (hereinafter called "Authority"), the STATE OF NEW YORK, acting by and through the Commissioner of Transportation (hereinafter called "State" and "Commissioner" respectively), and the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting by and through the Federal Highway Administration (hereinafter called "FHWA").

WITNESSETH:

WHEREAS, the Authority was created by Chapter 143 of the Laws of New York of 1950 (Title 9, Article 2 of the Public Authorities Law, as amended) and authorized thereby to construct, reconstruct, improve, maintain and operate a Thruway system together with facilities for the public incidental thereto; and

WHEREAS, the Authority is authorized to accept any grant of funds from the Federal government or from the State and to comply with the terms and conditions thereof; and

WHEREAS, the Authority, subject to agreements with its noteholders or bondholders, is authorized to collect fees, rentals and charges for the use of the Thruway or any part thereof; and

WHEREAS, the Authority is authorized to and has issued notes and bonds in the principal sum of Nine Hundred Seventy-Two Million Dollars ($972,000,000) for its corporate purposes; and

WHEREAS, the Authority has pledged receipts and revenues derived from the imposition of tolls, fees for vehicular use of the Thruway, and other charges to the payment of principal and interest on said bonds and notes; and

WHEREAS, as of the date of this Agreement, Five Hundred Nine Million Two Hundred Sixty-Six Thousand Dollars ($509,266,000) principal amount of bonds and notes remain outstanding; and

WHEREAS, the date of maturity of those bonds outstanding on the effective date of this agreement having the latest maturity date is 1996, and

WHEREAS, portions of the Thruway have been designated as a part of the Interstate System; and

WHEREAS, the Authority and the State desire to secure Federal funds for resurfacing, restoring and rehabilitating Thruway lanes as provided for in Section 105 of the Surface Transportation Assistance Act of 1978 (PL 95-599, 92 Stat. 2692).

NOW, THEREFORE, the Authority, the State and the Government, in consideration of the mutual promises herein set forth, do hereby agree as follows:

1. The Authority represents that as of the date of this agreement, the principal amount of bonds and notes which remain outstanding and constituting a valid lien against it are Five Hundred Nine Million Two Hundred Sixty-Six Thousand Dollars ($509,266,000). The Authority agrees to permit FHWA to perform an audit for purposes of verification of said amount.

2. (a) That the Thruway toll road (Interstate I-87) between Interchange #17 in the vicinity of Newburgh, New York, and Interchange #24 at Albany, New York, shall become free to the public upon the collection by the Authority of tolls, fees and other charges sufficient to liquidate the principal amount of bonds and notes outstanding as of the date hereof, and constituting a valid lien against it, including the

costs of maintenance and operation and debt service during the period of toll collection.

(b) That the Thruway toll road (Interstate I-90) between Interchange #24 at Albany and Interchange #50 at Buffalo, New York, shall become free to the public upon the collection by the Authority of tolls, fees and other charges sufficient to liquidate the principal amount of bonds and notes outstanding as of the date hereof, and constituting a valid lien against it, including the costs of maintenance, and operation and debt service during the period of toll collection.

(c) That the Thruway toll road (Interstate I-90) between Interchange #55 at Lackawanna, New York, and Interchange #61 at Ripley, New York, shall become free to the public upon the collection by the Authority of tolls, fees and other charges sufficient to liquidate the principal amount of bonds and notes outstanding as of the date hereof, and constituting a valid lien against it, including the costs of maintenance, and operation and debt service during the period of toll collection.

(d) That the Thruway toll roads (Interstate I-190) between Interchanges #53 and #N1, between Interchanges #N9 and #N11, between Interchanges #N17 and #N18, and between Interchanges #N20 and #N21, shall become free to the public upon the collection by the Authority of tolls, fees and other charges sufficient to liquidate the principal amount of bonds and notes outstanding as of the date hereof, and constituting a valid lien against it, including the costs of maintenance and operation and debt service during the period of toll collection.

(e) That the Thruway toll roads (Interstate I-87, Interstate I-287) between Interchanges #9 and #10 and between Interchanges #14A and #14B, shall become free to the public upon the collection by the Authority of tolls, fees and other charges sufficient to liquidate the principal amount of bonds and notes outstanding as of the date hereof, and constituting a valid lien against it, including the costs of maintenance and operation and debt service during the period of toll collection.

(f) That the Thruway toll road (Interstate I-87) between Interchanges #6A and #7A, shall become free to the public upon the collection by the Authority of tolls, fees and other charges sufficient to liquidate the principal amount of bonds and notes outstanding as of the date hereof, and constituting a valid lien against it, including the costs of maintenance and operation and debt service during the period of toll collection.

(g) That the Thruway toll road (Interstate I-90) between Interchange #B-1 and the Massachusetts State Boundary, shall become free to the public upon the collection by the Authority of tolls, fees and other charges sufficient to liquidate the principal amount of bonds and notes outstanding as of the date hereof, and constituting a valid lien against it, including the costs of maintenance and operation and debt service during the period of toll collection.

(h) That the Thruway toll road (Interstate I-95) between Interchanges #NE16 and #NE18B, shall become free to the public upon the collection by the Authority of tolls, fees and other charges sufficient to liquidate the principal amount of bonds and notes outstanding as of the date hereof, and constituting a valid lien against it, including the costs of maintenance and operation and debt service during the period of toll collection.

3. That if, for any reason, a Thruway toll road specified in Paragraph 2 above does not become free to the public upon collection of sufficient tolls, fees and other charges as specified herein, the Federal funds used for 4R projects on that Thruway toll road pursuant to this agreement shall be repaid to the Federal Treasury in accordance with the regulations of the Federal Highway Administration.

4. If any repayment due under the provisions of Paragraph 3 of this agreement is not made within 90 days from the date upon which the Thruway toll road was to become free of tolls, interest shall be paid for each day after the ninety day period that the Authority fails to make that toll road free. The interest rate is to be based on the current value of funds to the United States Treasury, it being understood that the percentage rate will be calculated by the Treasury in accordance with the then existing Treasury Department procedures.

5. That FHWA shall include all lane miles and vehicle-miles of travel for the Thruway toll roads subject to this Agreement in computing the annual apportionment of Federal-aid to the State in accordance with 23 USC 104(b)(5)(B) as provided for in 23 USC 119(a). In the event the computation method specified by 23 USC 104(b)(5)(B) shall be amended by future legislation to include different or additional factors, or to delete any current factor, FHWA shall apply the appropriate legislated factors in computing the annual apportionment to the State under Section 105 of the Surface Transportation Assistance Act of 1978, as such section may be amended.

6. When freed of tolls, those Thruway toll roads on the Interstate System at the date of this Agreement, plus the untolled portions thereof,

shall be treated the same as any other portions of the Interstate System which were constructed with Federal-aid.

7. Upon execution of this agreement there shall be no contractual obligation of the Federal Government for the expenditure of funds until after approval of plans, specifications and estimate for a project, as provided in 23 USC 106, and that obligation and expenditure of funds shall be subject to all terms and conditions of Title 23, USC, and applicable regulations and procedures which have been promulgated pursuant thereto.

8. The existing bond indebtedness ($509,266,000) stated in Paragraph 1 of this agreement shall not be increased so as to postpone the designated toll-free date of 1996, which is the date of maturity of those bonds outstanding on the effective date of this agreement having the latest maturity date. However, it is not the intent of this agreement to prohibit the Authority from incurring future bond indebtedness which is not associated with either the bond level at the time of this agreement or the designated toll-free date of 1996.

IN WITNESS WHEREOF, the parties hereto have executed this agreement effective the day and year first above written.

NEW YORK STATE THRUWAY AUTHORITY

/s/ Gerald Cummins
Chairman

/s/ JM

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

/s/ H.C. Hennessy
Commissioner

FEDERAL HIGHWAY ADMINISTRATION

/s/ L.P. Lamm
Administrator

FOLLOW-UP QUESTIONS FOR NEW YORK STATE THRUWAY AUTHORITY

1. According to the Federal Highway Administration, the New York State Thruway bridge does not qualify for Emergency Relief funding. However, Interstate 4R funds are available to replace the collapsed bridge. Are you planning to use I-4R funds for this purpose? If not, why not?

2. To date, what sources of financial assistance has New York identified for the Thruway bridge? Please give a description of the types and amounts of aid that appear to be available from Federal emergency programs, bridge insurance policies, or any other source.

3. With respect to the Thruway bridge collapse, what do you estimate to be the costs so far in additional police services, emergency assistance, routing of traffic over alternate routes, and design of a temporary detour? Also, please provide an estimate of these costs for the 90-day period from the date of the accident.

4. Please discuss insurance coverage for the Thruway bridge and for the loss of toll revenues. Was the bridge adequately insured? Is there 100 percent coverage on the loss of toll revenues? What is the deductible? What penalties might apply? Please provide any other relevant information about insurance coverage.

5. How much toll revenue does the NYSTA receive each year and how much is used specifically for maintenance, bond payments, and other costs?

6. Do you think it is prudent public policy for toll facilities to be ineligible for Federal-aid highway funds? Why?

7. Escrow accounts funded from toll revenues are maintained by many toll authorities for contingency purposes. Does New York maintain such an account? Should that be a requirement for toll authorities?

8. What effects do you think the larger and heavier trucks have had on the Thruway? Are trucks meeting their share of cost responsibilities in your view?

9. Please comment on the local opposition to the proposed temporary bypass route. What will the economic and safety

impacts be on the homes and businesses in the immediate area? How will adverse impacts be mitigated?

10. What will the cost be for replacement of the Thruway bridge? Please include a breakdown of all associated costs such as forensic work, toll loss, detours, and any other relevant costs.

11. What changes have been made in emergency procedures and your overall safety program following the Schoharie bridge collapse? In particular, what lessons have been learned to improve communications and emergency warnings?

12. At this stage in the investigation, what appears to be the cause of the bridge collapse? Please list the names and affiliations of those who are conducting investigations and indicate when their findings will become available.

13. When precisely will the Thruway become toll-free? What procedures are necessary to accomplish that?

Senator Daniel P. Moynihan
Washington, D.C.

May 7, 1987

Dear Senator,

The following is a formal statement for submission to the Committee for Environment and Highways investigating the Thruway bridge collapse and associated flooding, from the Committee to oppose the proposed Thruway bypass, known as S.T.O.P. Bypass, an anachronism for Struggle To Oppose Proposed Bypass.

The commitee is made up largely of Ft. Hunter, N.Y. area residents and was formed in response to the proposal of the New York State Thruway Authority to construct a temporary bypass on the northerly side of the collapsed Thruway bridge over the Schoharie Creek. This bypass will incorporate the present bridge over the Schoharie that is now part of New York State Route 5S, as well as a presently abandoned railroad bridge, into its structure.

The committee strongly opposes this planned bypass for the following reasons:

1. The bypass will be a very dangerous highway imperiling the lives and property of the people of Ft. Hunter, N.Y. as well as the lives and property of people traversing this bypass while traveling on the New York State Thruway. We feel this bypass is poorly engineered and inately hazzardous because it incorporates into its design a very steep grade dropping approximately 100 ft. in 600 ft. of linear travel, according to topigraphical maps. The proposed grade is so steep as to necessitate a run out ramp for vehicles not able to negotiate a 90 degree left turn soon following the steep descent. This section of the

proposed bypass is situated on and at the base of a hill that faces west by northwest and consequently would receive very little winter sun. The area to the west of the proposed bypass is the flat, open flood plain of the Schoharie Creek, an area noted for generating substained, high velocity, winter winds. We feel that when tractor-trailers .and other broad sided vehicles such as busses and R.V.s attempt to drive down the steep decline, during a winter storm with slippery, snow covered highway conditions and being hit broadside by high velocity, winter winds, accidents will be inevitable. If these accidents occur on the ninety degree left curve, where they are most likely, and the vehicles involved leave the highway to the right, as they almost assuredly will, these vehicles will be within 100ft. of several homes on Railroad Street in Ft. Hunter, N.Y. Since the elevation of the highway at this point is about ten feet higher than the homes immediately to the right of the highway, it seems to us the potential for out of control trucks crashing into our homes is unacceptably high.

2. The bypass will preemp to the exclusive use of the New York State Thruway the Rte 5S Bridge over the Schoharie Creek. In doing so our access to points west of Ft. Hunter such as the Auriesville Shrine will be greatly inconvenienced. Some members of the committee will lose their ability to earn a living because their fruit and vegetable stands and restaurant will be unaccessible to the general public for all intent and purposes. The boat launch ramp and associated tourist and

recreational area at the Erie Canal Schoharie Crossing Acuaduct will be shut down.

3. The cost of the proposed bypass is unnecessarily high because it is being built across rough hilly terrain and is longer than a more direct route available on the south side of the collapsed bridge.

4. The 5.8 million dollar bypass would have an expected useful life span of only eight months.

5. The bypass is unnecessarily intrusive into the lives of the people of Ft. Hunter and the surrounding communities. A southside bypass would little affect anyone as it would not cut Route 5S traffic and it would pass across essentially unused lands.

We would further note that our local elected officials, namely Paul Tonko and Hugh Farley from the New York State Legislature and the Montgomery County Board of Supervisors all have expressed varying degrees of opposition to the proposed bypass plan. The Board of Supervisors has passed a formal resolution of opposition to the bypass. Both Mr. Tonko's and Mr. Farley's office have been in constant communication with Thruway officials trying to get them to consider other bypass routes, so far to no avail.

We feel that the same pressures that caused the premature opening of the New York State Thruway in 1954 and that may have directly or indirectly contributed to the bridge collapse are at work today, trying to rush this ill-conceived bypass road into service. Unfortunately the tragic consequences may be much greater this time around.

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John Bush
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William Strevy
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Gerald Wood
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